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ABSTRACT

One of the most important factors in improving health care among minority groups is the training of adequate numbers of minority health care workers. In view of this need, the Harvard Medical School and the Harvard School of Dental Medicine initiated a Health Careers Summer Program designed to attract more minority group students into medicine and dentistry, and to strengthen their academic preparation in science and mathematics. See also Volume II of the Evaluation Report (TM 000 761) and the Report Summary (TM 000 762). (AG)

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AN EVALUATION REPORT OF THE HARVARD HEALTH CAREERS SUMMER PROGRAM FOR MINORITY STUDENTS*

VOLUME I

by

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AN EVALUATION OF
THE HARVARD HEALTH CAREERS SUMMER PROGRAM
FOR MINORITY STUDENTS

SECTION I

INTRODUCTION

The Problem

> "... The poor suffer a great deal more infectious disease, go to the hospital more often, and stay there longer...it is the black American and other minorities for whom the 'system' works least well..." (2)*

This statement by Dr. Roger O. Egeberg, Assistant Secretary for Health, Education and Welfare, spotlights the problems of health and health care that confront minority groups in America. This nation has the best health care services in the world, but these only serve to sharpen the contrast between the high quality of medical care and modern facilities available in the medical school teaching hospitals and the high incidence of disease in the urban ghettos and rural slums.

Blacks, whose numbers are disproportionately large among the American poor, simply do not have the income to afford top-flight medical care. In 1969, for example, 46.9% of all black families earned less than $5,000. (2) In addition to lack of money, racial discrimination also contributes to the problem of health care for minorities.

The health care delivery problem in America is further exacerbated by the tendency of most minority physicians and dentists to serve only those persons who are in the same ethnic

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*References are given throughout in ( ).

group as themselves. Since there is an extreme shortage of all types of health care workers among minority groups, existing trained personnel are not sufficient to meet the needs of such groups. The reasons for this shortage are not hard to find. Although there are 107 medical schools in the United States, the admission of blacks to medical school has been almost totally limited to two predominantly black institutions: Meharry Medical College and Howard University Medical School. As a result, the bulk of the burden for supplying health care professionals to the black segment of the population has rested on these two schools. As recently as 1968, Meharry and Howard accounted for over 60% (450 out of 730) of all blacks graduating from medical school. (3) Today, blacks still constitute only 3% of all students enrolled in all the nation's medical schools. (2)

There are only 7,000 black physicians and dentists, or one per 3,000 of black population. In comparison, there are about 600,000 white physicians and dentists, or one per 300 of white population - a ten to one difference. Ratios among other minority groups such as Mexican-Americans, Puerto Ricans and American Indians are even less favorable.

There is general agreement among most medical schools that one of the most important factors in improving health care among minority groups is the training of adequate numbers of minority health care workers. Concerned organizations such as the Association of American Medical Colleges (AAMC) have begun to look more closely at the problem. They postulate that in order to increase the national per capita average of minority physicians, 8,000 minority students must be trained as health care workers, physicians and dentists between the years 1970 and 1976. (5)

Increasing the number of minority group physicians, however, is a slow process. Many of the medical schools have not actively recruited or admitted blacks or other minorities; those schools that have opened their admissions to minority groups are still uncertain as to the type of student they should seek.

The biggest obstacle for minority students interested in medicine and dentistry has been financial. (5) Even the most qualified minority students find it exceedingly difficult to obtain the long-range financial support for premedical, medical and postgraduate training. Many students in the past have had to accept jobs upon college graduation, in the hope of saving enough funds to pursue their desired career; but few can save enough and soon enough to enter medical school.

Minority students have also been faced with poor academic preparation and an inadequate science background in their quest for medical and graduate school entrance. It has been generally observed that predominantly black colleges usually do not possess the facilities or personnel to provide their students with adequate prerequisites for medical college admission as ordinarily prescribed. Moreover, the counseling services available in these colleges are seldom of the sort that might point a promising student toward graduate work in the health professions. Data collected for the present study strongly support these observations.

To aid in the rapid increase of minority group health workers, non-traditional channels into the health care professions must be found. Many medical schools already feel that their curriculum is too long, needs general overhauling and provides little relevance to minority health care problems. Curricular reform may eventually produce new teaching and learning techniques and new types of basic knowledge better adapted to the needs of minority group physicians and the clients they will serve. However, the siutation is so urgent that more readily available shortcuts are also needed. One such short-cut, for instance, might be to provide special training for returning Army medical corpsmen that would complement their service experience and thereby provide an immediate source of health care workers for the minority communities.

Approaches to the Problem

We have touched on the problem areas which hamper the entrance of minorities into the health professions: 1) no recruitment or visibility for admission; 2) financial costs; 3) inadequate academic preparation, especially in science; and 4) no present way to use non-traditional methods of training health workers. To correct this situation and enhance the training of health care professionals for minorities, several options exist:

1) Disseminating information to minority group students about realistic opportunities in the health care professions.

2) Increasing immediately the number of minority students admitted to medical school and providing them with full financial support.

3) Enhancing the academic preparation of potential applicants to health science schools.

4) Finding new and non-traditional ways of training health professionals and exploring the feasibility of new titles, job descriptions and positions.

There are at least two approaches to option 3. The first is to offer promising students an extra year of preparation following college graduation before entering the normal four-year medical course. This is essentially a remedial approach. Another approach is the one implemented by the Harvard Medical School, the Harvard School of Dental Medicine and the Harvard Summer School. This approach provides the prerequisites during a portion of the normal summer vacation in a normal academic environment. This approach supplements the student's prerequisite training, enhances his motivation to enter the health professions and makes it possible for him to pursue his professional training on schedule.

This latter approach forms the basis for the Health Careers Summer Program Minority Students (HCSP) initiated in 1969.

The Genesis and Early Development of HCSP

The initial impetus for HCSP came in 1968 in a letter from 11 faculty members to Dean Robert H. Ebert of the Harvard Medical School. They wrote, "The social problems of our nation's cities and the deterioration of race relations in America have been of increasing concern to all of us for some time."

This concern was further reinforced by a petition signed by half of the students at the Medical School during the early spring of 1968. In addition to a request that Harvard establish a commission to assess the potential contributions of the Harvard Medical Community to the black community, the petitioners noted that they "totally support the proposals for immediate programs to recruit black students."

In April 1968, Dean Ebert created the Committee for Disadvantaged Students and asked it to recommend ways to increase the enrollment of disadvantaged students at Harvard Medical and Dental Schools and at similar schools throughout the country.

In a meeting held on May 28, 1968, the following suggestions were made by the black students on the Committee:

1) A special summer training program in premedical education should be developed. This program should be similar to the Intensive Summer Study Program (ISSP) that had been running since 1965 at the summer schools of Harvard, Yale and Columbia. The purpose of ISSP was to provide both white and black students from small Southern colleges with academic training which would better prepare them for graduate school.

2) The special summer program in premedical education should be designed to accept students at the end of of their freshman year and continue with them throughout their remaining summers in college.

3) The majority of the course work should be in the basic sciences (Chemistry, Biology, etc.) and should be taken at the Harvard Summer School.

4) At the same time, the Medical School should be heavily involved in providing a distinctive premedical character to the program.

5) The program should prepare students for all medical schools, not just Harvard Medical School.

6) Persons admitted to Harvard Medical School who had been participants in the summer program should be allowed to do further work in the program, if needed, during the summer after their graduation from college.

In accordance with these recommendations, the Health Careers Summer Program (HCSP) was planned and brought into operation during the summer of 1969. It was to serve as an enrichment program for those minority students who had not been given the opportunity to demonstrate the extent of their ability. This would be implemented by making Harvard's summer educational opportunities more accessible to minority students interested in medicine or dentistry, and backing these up with financial and human resources.

In initiating the development of HCSP, it was emphasized that medical educators have the goal of inducing the most talented young people they can find to enter the field of medicine. Such talented students must not be barred from a medical education by economic or similar barriers. But neither should they be barred because they come from the "wrong" geographic area or ethnic group which on one basis or another may be deemed to be over-represented. Ability must be decisive.

This special program, which started with the assistance and cooperation of the Harvard Summer School, admitted a group of 55 minority students for eight weeks of academic training. The rationale behind the Program was to increase the academic preparation of these students so that their chances of acceptance into medical, dental or graduate school would be greatly enhanced. The Program was also designed to provide the students with greater exposure to the health-related professions by giving them first-hand experience in selected areas.

The HCSP was and is divided into three components:

1) The Academic Course Work in the Harvard Summer School;
2) an Academic Tutorial; and
3) a Clinical Tutorial.

These three components will be described later in the report in greater detail.

Evaluation of the HCSP

Although the HCSP is having some impact on the pool of qualified minority applicants for medical and dental schools, the number of participants is limited by available funds. It is hoped that the evaluation of HCSP provided in this report will show that such a program enhances the ability of its students to move into medical, dental and graduate schools, and that this type of approach can serve as a model for eventual adoption by other universities.

In order to improve upon HCSP continually, repeated evaluations should be made to determine the strengths and weaknesses of the Program. Although long-range evaluation is necessary to ascertain the total impact of HCSP, some immediate evidence as to whether the Program is approaching its goals can be obtained from current data.

In brief, the present evaluation has a three-fold purpose:

1) to decide whether the Program is serving its purposes sufficiently well to warrant its continuance;

2) to decide what improvements can be made in its method of operations; and

3) to decide whether and how HCSP might serve as a model for implementation in other university settings.

Although a fully adequate assessment of the long-term impact of HCSP will require many years, it is felt that an examination of its short-term impact is not only useful but imperative. The present report is therefore concerned with the short-term impact of HCSP as of 1971. The evaluation addresses five major questions:

1) To what extent is the Program reaching the types of students for whom it is intended?

2) How effective is the Program overall in helping the students towards careers in the health professions?

3) In respect to this purpose, what is the effectiveness of each of the major components of the Program?

4) In what respects can the Program be strengthened?

5) Is a program like HCSP adaptable elsewhere?

The answers to these questions are embodied in the remaining sections of this report. Section II describes and evaluates the effectiveness of the recruitment and admissions procedures. Section III investigates whether there was an excess of qualified applicants to the Program. Section IV assesses the early effects of the Program in helping students to reach medical and dental school. Section V describes in detail the operations of the 1970 Program. Section VI describes the financial aspects of the Program. Sections VII and VIII assess the various components of the Program as seen by the participants and their tutors. Section IX assesses various aspects of the Program as seen by several observers. Section X discusses those aspects of the Program that need to be considered in its extension to other university settings. Section XI describes baseline data collected for long-term evaluation. Section XII summarizes the conclusions and recommendations developed from this first evaluation effort.

SECTION II

RECRUITMENT AND ADMISSIONS

Recruitment of Students

The following describes methods of recruiting students and compares the experiences of 1969 and 1970.

Since the Intensive Summer Study Program (ISSP) had been in existence four years prior to 1969 and had developed good working relationships with the administrations and student bodies of many small Southern black colleges, the ISSP was asked to handle the majority of Southern recruitment for the 1969 HCSP.

The framework of ISSP's recruitment involved the use of coordinators at each participating college who would disburse materials, counsel students and aid them in completing their application forms. In addition to sending packets of application to these coordinators for dissemination, the recruiters for ISSP interviewed a great number of students interested in HCSP as they journeyed on their recruitment trips. These efforts produced about 100 completed applications.

Since recruitment was to occur nationally, aid was solicited from the following organizations: National Medical Association, Student National Medical Association, Medical Committee for Human Rights, Student Health Organization and Oklahomans for Indian Opportunities. These organizations were to contact physicians practicing within areas heavily populated by minority groups and solicit their help in disseminating information about HCSP. It was rationalized that the local doctors would have good interaction with the community and would be knowledgeable of the intentions of some of the youths within their areas who were interested in medicine. This phase of the recruitment, however, produced very few applications.

Application forms and Program information were also sent to the biology department chairmen and premedical advisors at many Northern institutions. "Ivy-League" schools were excluded since it was felt that minority students who attended these schools were receiving the type of academic training that would adequately prepare them for professional school entrance. On the other hand, special attempts were made to recruit minority students who attended the Northern community colleges.

Since the Program was being held in Boston, it was felt that a major recruiting emphasis should be placed on that area since there is a shortage of minority group physicians and dentists in Greater Boston and vicinity. Even though this feeling of local obligation was promulgated extensively, it also produced few applications from the Boston area.

The 1969 recruitment effort produced a pool of 267 applicants.

Recruitment of applicants for the 1970 HCSP followed patterns similar to those followed in 1969, with certain changes considered necessary to increase the applicant pool. The science department chairmen at the college attended by previous HCSP and ISSP participants were sent HCSP information and application forms to be distributed on their campuses. (See Appendix I for a copy of the 1970 information brochure.) A major part of the 1970 recruitment effort, however, was carried out by the participants in the 1969 HCSP. Each student was sent five application forms (See Appendix II) and asked to distribute them among his or her friends whom he or she felt were interested in careers in a health-related profession. The former students were also sent recommendation forms and asked to evaluate each of their friends who submitted applications to HCSP. (See Appendix III for student recommendation form.)

An ad hoc committee, established to advise on the conduct of the 1970 HCSP, decided not to use the interviewing services of ISSP for 1970. There were four reasons for this decision: 1) ISSP services would have cost the Program approximately $5000; 2) the interviewing was not always structured properly; and 3) biomedically-oriented interviewers were not always available; and 4) it was also felt that the reports of unknown interviewers could bias the Admissions Committee.

Special efforts were made to recruit more Puerto Rican, Mexican-American and Native American (American Indian) students in 1970. To help facilitate this, the application deadline was extended for these groups in order to give special recruiters a last-minute opportunity to seek interested applicants from the Northern, Western and Southwestern parts of the country.

Because of the comparatively small number of Boston applicants to the 1969 Program, extensive recruiting efforts were again carried out in that area for 1970.* As a result of these efforts, 61 applications were received from students in the Greater Boston area.

Applications were received from students in 83 schools in 1969 and 138 schools in 1970.

Table 1 lists pertinent data about the applicant pools to the 1969 and 1970 HCSP.

The degree of success of the 1970 recruitment effort as compared with 1969 can be seen in the following ways:

1) The total number of applicants increased by 185 (69%).
2) The number of black applicants increased by 137 (55%).
3) The number of Mexican-American applicants increased by 30 (750%).
4) The number of Puerto Rican applicants increased by 7 (117%).
5) Four Native American applicants were found in 1970 as compared to none in 1969.
6) The ratio of male:female applicants changed from approximately 2:1 in 1969 to 3:2 in 1970.
7) Sophomores continued to be the modal applicant group.

---

*Invaluable assistance was given to HCSP in this endeavor by the Big Brother Alliance and by Mark Goode, Community Relations Director at the Harvard Medical School.

Table 1

1969 and 1970 HCSP APPLICANT POOLS

	1970	1969	Δ
1. **Minority Group**			
Black	388	251	+137
Mexican-American	34	4	+ 30
Puerto Rican	13	6	+ 7
American Indian (Native American)	4	0	+ 4
Cuban	1	0	+ 1
Asian American	5	1	+ 4
Peruvian	1	0	+ 1
Colombian	1	0	+ 1
Italian	1	0	+ 1
Nigerian	1	0	+ 1
Greek	1	0	+ 1
Panamanian	1	0	+ 1
Appalachian White	1	5	- 4
2. **Sex**			
Male	267	183	+ 84
Female	185	84	+101
3. **Applicants' Year in School**			
Graduate Students	4	5	- 1
Seniors	16	9	+ 7
Juniors	147	93	+ 54
Sophomores	158	103	+ 55
Freshmen	103	48	+ 55
High School Graduates	11	9	+ 2
Uncertain	13	0	+ 13
4. **Home Geographic Location**			
North	219	109	+110
South/Southwest	227	149	+ 78
Foreign	6	9	- 3
5. **School Geographic Location**			
North	227	102	+125
South/Southwest	225	165	+ 60
6. **Boston Applicants**	61	12	+ 49
7. **Former HCSP Participants**	31	0	+ 31
TOTAL APPLICANTS	452	267	+185

These changes in the applicant pool for 1970 attest to the efficacy of the 1970 recruitment effort. It seems apparent that reliance on HCSP's own network of schools and former students serves as an effective way of reaching the minority population of prospective students. Using similar recruitment procedures for 1971 has resulted in 843 completed applications to the 1971 HCSP, thus further confirming the effectiveness of these procedures.

Admission of Participants

In 1969, a multi-purpose group of several people, mostly at the Faculty level, served to direct all phases of operation of HCSP, including admission. Although decisions regarding admission to HCSP in 1969 were made by a small group of persons, the basic procedure was similar to that used in 1970. Therefore, the following discussion will deal only with admissions for 1970. The following describes procedures for selecting students and compares the experiences of 1969 and 1970. Participants in the 1970 Program were selected by an Admissions Committee composed of 15 members: 5 Medical School Faculty members and 10 students from several Schools within the Harvard Community. Each minority group (Blacks, Mexican-Americans, Puerto Ricans and American Indians) that was to be given major consideration in the selection process was represented by at least two members on the Admissions Committee; the Committee was chaired by Dr. Richard A.S. Williams, a black

Teaching Fellow at the Harvard Medical School and at the Peter Bent Brigham Hospital.

Difficulties arose early in the selection procedures since the Admissions Committee was uncertain as to the types of students it should select. Questions raised were the following:

1) Should minority students already attending major universities be given consideration?

2) How does a black student with a high grade point average from a small Southern school compare with a minority student from a major institution?

3) How much consideration should be given to students who do not have high grade point averages, but have expressed through their application a strong desire for the field of medicine?

4) Should a quota be placed on the number of students to be selected from each of the minority groups?

5) What constitutes a minority group?

6) What boundaries should be used in determining geographic areas?

7) What socio-economic level should be given priority?

Policy decisions concerning admissions procedures were established in the initial meeting of the Admissions Committee. They were:

1) At least seven members of the Admissions Committee should be present at each meeting.

2) A two-thirds majority of those present would determine whether a student was admitted or rejected. If the required two-thirds majority was not reached, the application would remain active and be considered at another time.

3) Student selection from the various geographic locales should conform to the following breakdown:
    a) 25% - Boston
    b) 25% - Other urban areas
    c) 50% - South and Southwest
4) Seniors in college should be admitted only if they had not been accepted to medical school for the fall of 1970. These students, however, should receive low priority.
5) High School seniors may be admitted only if they have been accepted to college.
6) Former HCSP students should be given highest priority for acceptance into the Program.

The percentage of students to be selected by geographic locale was suggested by the _ad hoc_ Committee mentioned earlier, and was to be used as a guideline for the Admissions Committee. The exact percentages, however, did not have to be adhered to by the Admissions Committee since these numbers were not considered a mandate. In suggesting that 25% of the students come from the Greater Boston area, the _ad hoc_ Committee felt that Harvard should be responsive to the needs of its local minority community.

In subsequent meetings of the Admissions Committee, several problems arose that slowed down the selection processes. One of these problems involved an emotional discussion of a proposal by the Mexican-American contingency that in future years HCSP should increase its Spanish-speaking population to 50%. Although this proposal was voted down by the Committee, it increased their senstivity to other minority groups and played an important part in determining the number of non-black students selected.

The Committee also decided that each application should be read by at least four members of the group. Each reader would then place the student into one of three categories: 1) admit, 2) hold, or 3) reject. Students receiving 4 "admits" from all readers were to be classified as immediate accepts. Those who received combinations of 3 "admits" and 1 "hold," 2 "admits" and 2 "holds", 3 "admits" and 1 "hold", or 3 "holds" and 1 "admit" were to be classified as eventual accepts or eventual rejects. All other combinations received by the students were to be classified as immediate rejects.

As in 1969, the applicant's total file provided the criteria from which students were to be selected.

The student's total application file consisted of a form which provided the Committee with information concerning family and educational background, work experience and outside activities, a transcript of the student's grades, an essay (most of which were autobiographical), and recommendations from two current or former instructors. Copies of the Application Form developed for the 1970 HCSP are attached in Appendix II. Many of the Committee members, however, expressed feelings of inadequacy in evaluating the transcripts of students who attended predominantly black colleges. They felt that their knowledge as to how these schools could be compared to major institutions was limited. The black members of the Committee attempted to provide as much information as possible concerning the quality of the predominantly black colleges.

Members from other minorities did likewise for their applicants.

Since many of the schools were unknown to some of the Committee members, it was realized that non-traditional methods in selecting the students would have to be employed. The Committee agreed that it would attempt to select students on the basis of their "intellectual promise." Definition of "intellectual promise" became a major problem for the Committee. Much of this was hoped to have been ascertained from the students' essays and letters of recommendation. The Committee also agreed that students who attended predominantly black schools in the South are not "quite visible" to the nation's medical schools and therefore should be given high consideration. Only those students who were U.S. citizens or were applying for U.S. citizenship were eligible for HCSP.

On April 15, 1970, letters were sent to 100 applicants informing them that they had been accepted as participants for the 1970 HCSP. An additional 18 letters were sent to applicants who received waiting list status. Of the first 100 who were accepted into HCSP for 1970, 18 declined; therefore all 18 students from the waiting list were able to participate in the Program. Two students accepted into the 1970 Program did not enroll at the Harvard Summer School on June 29, 1970; thus the final 1970 HCSP class was 98.

Table 2 shows the admissions data on the 1970 HCSP.

Table 2

ADMISSIONS DATA ON 1970 HCSP

	Adm/Acc	Adm/Dec*	Total-Adm.	Rej	Total Pool
Minority Group					
Black	77	17	94	294	388
Mexican-American	12	3	15	19	34
Puerto Rican	5	0	5	8	13
Native American	3	0	3	1	4
Other	1	0	1	11	12
Sex					
Male	69	11	80	187	267
Female	29	9	38	147	185
Status in School					
Seniors	0	0	0	16	16
Juniors	42	16	58	89	147
Sophomores	43	2	45	113	158
Freshmen	12	1	13	90	103
High School Graduates	0	0	0	11	11
Others	1	1	2	15	17
Residence					
North	42	6	48	171	219
South/Southwest	56	14	70	157	227
Foreign	0	0	0	6	6
School					
North	34	5	39	188	227
South/Southwest	63	15	78	147	225
Not in School	1	0	1	0	1
Boston Participants	12	0	12	50	62
TOTAL	98	20	118	334	452

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*This number includes 18 students who were admitted into the Program and declined participation and two students who were accepted but did not enroll.

From Table 2 we may infer the following:

1) The decisions of the 1970 HCSP Admissions Committee, whether conscious or unconscious, were made on other bases than the proportions in the applicant pool and extended the advantages of HCSP to three minority groups (Mexican-American, Puerto Rican and American Indian) having a very small proportion of the applicants.
2) The decisions of the 1970 HCSP Admissions Committee, whether conscious or unconscious, were to accept 68% males into the Program, although the applicant pool contained only 59%. Although the percentage of women accepted was somewhat smaller than that reflected in the applicant pool, nevertheless it was still several-fold greater than the national proportion of women accepted into medical or dental school.
3) The decision of the 1970 HCSP Admissions Committee was to favor sophomores and juniors in whom they felt career choices were more stable.
4) Although approximately equal applications were received from students living and studying in the North and South/Southwest, there was a tendency, whether conscious, for the Admissions Committee to favor students from the South/Southwest.

Table 3 lists the colleges represented by the 1970 HCSP participants. Students from 55 colleges attended the 1970 HCSP; 37 schools were represented in the 1969 HCSP.

Table 3

SCHOOLS REPRESENTED IN THE 1970 HCSP

Figures in ( ) = number of participants from each college.

NORTH

University of Alaska (1)
College, Alaska

Brandeis University (1)
Waltham, Massachusetts

Brooklyn College (4)
Brooklyn, New York

Boston College (1)
Chestnut Hill, Massachusetts

UCLA (1)
Los Angeles, California

Concordia College (1)
Moorhead, Minnesota

Delaware State College (2)
Dover, Delaware

Howard University (1)
Washington, D.C.

University of Illinois (1)
Urbana, Illinois

Ithaca College (1)
Ithaca, New York

Lincoln University (2)
Lincoln, Pennsylvania

University of Massachusetts (3)
Amherst, Massachusetts

Univ. of Massachusetts-Boston (4)
Boston, Massachusetts

New York University (4)
New York, New York

Northeastern University (3)
Boston, Massachusetts

Ohio University (1)
Athens, Ohio

University of Pennsylvania (1)
Philadelphia, Pennsylvania

University of South Dakota (1)
Vermillion, South Dakota

SUNY-Buffalo (2)
Buffalo, New York

Utica College (1)
Utica, New York

Table 3 (continued)

SOUTH

Alabama A & M College (2)
Normal, Alabama

Alcorn A & M College (2)
Lorman, Mississippi

Arkansas A.M. & N. College (1)
Pine Bluff, Arkansas

Benedict College (2)
Columbia, South Carolina

Bennett College (2)
Greensboro, North Carolina

Dillard University (3)
New Orleans, Louisiana

Jackson State University (7)
Jackson, Mississippi

Kentucky State College (1)
Frankfort, Kentucky

Livingstone College (1)
Salisbury, North Carolina

Mercer University (2)
Macon Georgia

Miles College (1)
Birmingham, Alabama

Morehouse College (2)
Atlanta, Georgia

Norfolk State College (3)
Norfolk, Virginia

Oakwood College (1)
Huntsville, Alabama

Philander Smith College (1)
Little Rock Arkansas

St. Augustine's College (1)
Raleigh, North Carolina

Savannah State College (1)
Savannah, Georgia

Spelman College (2)
Atlanta, Georgia

Talladega College (1)
Talladega, Alabama

Tougaloo College (6)
Tougaloo, Mississippi

Tuskegee Institute (2)
Tuskegee, Alabama

Virginia State College (5)
Petersburg, Virginia

Voorhees College (1)
Denmark, South Carolina

Winston-Salem State University (1)
Winston-Salem, North Carolina

Table 3 (continued)

SOUTHWEST

Bishop College (1)
Sallas, Texas

University of Houston (1)
Houston, Texas

Huston-Tillotson College (1)
Austin, Texas

Langston University (1)
Langston, Oklahoma

University of New Mexico (1)
Albuquerque, New Mexico

New Mexico Highlands University (1)
Las Vegas, New Mexico

Pan American College (1)
Donna, Texas

Prairie View A & M College (1)
Prairie View, Texas

Southwestern State University (1)
Weatherford, Oklahoma

University of Texas - El Paso (1)
El Paso, Texas

Trinity College (1)
San Antonio, Texas

Demographic and Educational Data on 1970 HCSP Participants

Tables 4 to 7 and the following narrative summarize information about the 1970 HCSP participants. This data reflects the extend to which the 1970 Admissions Committee was able to reach those members of minority groups whom it felt would be most benefitted by the HCSP.

Sex. Of the 98 participants in the 1970 HCSP, 28 were women and 70 were men. The national average of women actively practicing in medicine today is approximately 8%.

A comparison of the HCSP females with this average indicates that minority group females show a greater interest in the medical profession. This relatively high percentage of minority group women interested in medicine may be caused by several factors: 1) the relatively larger proportion of black women to black men who complete their education; 2) the increasing desire of minority group women to improve health care delivery; and 3) the growing trend among all women (majority group included) to enter professions that were once dominated by men.

Age. The ages of the 1970 participants ranged from 18 to 32, with 21 being the mean age. It should be noted that 23% of the students were 22 years of age or older. This is significant since it is around this age that an individual's decision for a particular career should have crystallized and entrance into the specialization stage should have occurred.(6) Some of these students might have not pursued careers in medicine if it were not for a program such as HCSP. Many of the students felt that their inadequate preparation in science would greatly inhibit their chances of getting into medical school. By participation in HCSP, their identification with physicians may have been increased, their motivation revitalized, and their perception of their chances of medical or dental school admission may have become more realistic.

Occupation of Family Members of 1970 HCSP Participants. As shown in Table 4, the occupations of fathers of the 1970 HCSP students are distributed primarily among those jobs associated with low socio-economic status. The largest percent of the fathers (30%) worked in unskilled jobs, with factory workers making up the second highest percent (11%) of jobs held by the fathers. It is interesting to note that only 4% of the participants' fathers had an occupation (teacher) requiring at least a college education. Two other occupations in which a college education may have been required are accounting and clergy. Five percent of the fathers comprised these groups. Only 15% of the fathers of participants had ever attended college.

It is clear from Table 5 that the largest proportion of the mothers are not employed outside the home, and with most of the fathers working in occupations with low salary potential it again reinforces the fact that their children will have a difficult time financing their studies for a professional career unless some outside resources are available. Eighteen percent of the participants' mothers had at least attended college;

most of the mothers within this group had completed their college education and 11% of them were employed as teachers.

Thirty-four percent of the students had one brother or sister who had taken some college courses.

College Courses Taken by Participants. In examining the major fields of concentration of HCSP participants as shown in Table 6, it can be seen that 55 % of them were majoring in biology. This is a high percentage and compares with only 39% biology majors in the Harvard Medical School class of 1973. The high percentage of HCSP participants majoring in biology-oriented fields of study follows a pattern that is common among minority group students. They feel that their association with life sciences increases their identification with medicine and their probability of medical school admission. These ideas are usually perpetuated by the premedical counselors at many of the colleges at which these students matriculated; in many instances these counselors are chairmen of biology departments

Twelve percent of the HCSP students majored in premedical school education, a curriculum with emphasis on biology. The facts are that "premedical" as a major field of study at most large universities is no longer available and has been replaced by biology, molecular biology and biological chemistry.

Most of the HCSP participants were biology majors, and thus they had taken more courses in biology (an average of three per person) than any other major science area. The 1970 HCSP students had taken at least one course from each science area shown in Table 7.

Table 4

OCCUPATIONS OF FATHERS OF 1970 HCSP PARTICIPANTS

Occupation	Percent of Participants
Unskilled worker	30%
Factory worker	11%
Skilled worker	10%
Farmer	5%
Government Service	5%
Teacher (college, high school or elementary school)	4%
Clergy	3%
Accountant, Bookkeeper, Auditor	2%
Armed Services	2%
Barber	1%
Community worker	1%
Insurance worker	1%
Salesman	1%

Unemployed	5%
Deceased	7%
Unknown	12%

Table 5

OCCUPATIONS OF MOTHERS OF 1970 HCSP PARTICIPANTS

Occupation	Percent of Participants
Housewife	47%
Teacher	11%
Domestic	8%
Factory worker	8%
Clerical (Secretary, File Clerk)	6%
Nurse	5%
Community worker	3%
Accountant, Bookkeeper, Auditor	2%
Government Service	2%
Saleswoman	2%
Beautician	1%
Insurance worker	1%
Lab Technician	1%
Seamstress	1%

Unknown	2%

Table 6

MAJOR FIELDS OF CONCENTRATION FOR 1970 HCSP PARTICIPANTS

Major	Percent of Participants
Biology	55%
Chemistry	17%
Premedical	12%
Psychology	5%
Mathematics	2%
Pharmacy	2%
Medical Technology	1%
Predental	1%
Sociology	1%

Other	3%

Table 7

MAJOR SCIENCE COURSES TAKEN BY 1970 HCSP PARTICIPANTS

	Percent Taking Sciences Courses			
Number of Courses	Biology	Chemistry	Physics	Math
0	12%	11%	52%	2%
1	9%	36%	46%	45%
2	24%	23%	2%	34%
3	24%	22%	0	6%
4	11%	6%	0	6%
5	9%	2%	0	1%
6	5%	0	0	0
7	4%	0	0	0
8	1%	0	0	0
9	1%	0	0	0

SECTION III

INVESTIGATION OF POSSIBLE EXCESS OF ADMISSIBLE APPLICANTS

In this section we shall investigate the extent to which the Program is reaching the types of students for whom it is intended, i.e. aiding undergraduates who come from minority segments of the population who are

1) interested in having careers in the health professions;
2) thought to have the ability to prepare themselves for such careers despite the absence of the traditional types of evidence to support such a presumption; and
3) unlikely, because of inadequate preparation and lack of stimulation, to undertake such preparation in the absence of special stimulus and training such as provided by the HCSP.

Given the 1970 applicant pool, could a significantly larger number of students have been admitted to HCSP in accordance with the criteria established by the Admissions Committee?

The answer to this question is "yes". The approach to this question and its rationale follow.

It is hypothesized that HCSP should be expanded. The rationale for this hypothesis is based on the feeling that a greater number of minority students could have benefited from the Program than we were able to accept. To test this hypothesis, there will be an attempt to show that many more students could have benefited from the Program than were actually admitted. By definition, it is felt that a minority group member has benefited from the Program if he subsequently gains admission to medical or dental school or to a graduate program in a life or health science when, without the Program (and we can never be certain of this), he might have failed to gain admission. Put another way, the Program should benefit currently marginal candidates for particular graduate or professional schools by greatly increasing their chances of admission; to benefit the minority group students in this way is an objective of the Program.

To analyze this objective, it has been divided into two parts:

1) identifying the **"marginal"** applicants from the total number of HCSP applicants, and

2) giving them what they need (although at the present time we cannot be sure of this) to get into professional or graduate school.

The prior requirement of inducing marginal applicants to apply to HCSP is not considered here.

To support our hypothesis, it is deemed necessary to show that a significant number of applicants could have been perceived in the aggregate by the Admissions Committee to have been just as qualified as those who were actually admitted. Since 100 students were accepted into the Program (only 98 participated), one test of this will be to show that there were at least another 98 equally well qualified out of the total 452 applicants for whom fairly complete data are available.

In one step of the analysis an attempt has been made to admit students by computer, using an "admissions" function. In this approximation the same criteria considered by the Admissions Committee were utilized:

1) grade point average (GPA),
2) letters of recommendation,
3) rating of school,
4) socio-economic status, and
5) essay.

The probability of a student's being selected to the Program with a particular GPA was determined by the Coordinator-Head Tutor, who was also a member of the Admissions Committee. The determinations were made by reflecting on discussions of the Admissions Committee concerning grade point averages. It was the consensus of the Committee that applicants with GPAs above 3.75 and below 3.3 should be given less consideration than other applicants. (A = 4.0; B = 3.0; C = 2.0; D = 1.0; E = 0)

The rating of the applicant's undergraduate school was obtained from The New American Guide to Colleges by Gene Hawes (see Appendix IV for explanation). This code categorizes schools into six groups: A, B, C, D, E, and F. (A = 0; B = 1; C = 2; D = 3; E = 4; F = 5) One of the guidelines of the Admissions Committee was to select students from the lesser-known colleges that do not send a great percentage of their graduates to professional school. Therefore, with all other criteria being equal, a student from an "F"-rated school would have greater probability of being admitted to HCSP than one from an "A"-rated school. To take this a step further, a student from Tougaloo (an "E"-rated school) with a 4.0 GPA would have a greater probability of selection to HCSP than a student from Yale (an "A"-rated school) with a 3.5 GPA. This in effect gave a higher GPA score to be included in the weighted admissions function to the students from less selective colleges.

A second variable in the weighted admissions function was socio-economic status. This status was determined by using the Hollingshead scale, a composite index which utilizes four categories of education and seven categories of occupations (see Appendix V). It is recognized that the Hollingshead scale does not take ethnic differences into account, but it was the best measure obtainable at this writing.

A third variable in the weighted admissions function was ratings of the letters of recommendation. The recommenders were asked to summarize their recommendation in five categories as shown in Table 8, and they were scored "1" to "5".

Table 8

RECOMMENDATION SCALE

Recommendation	Scale
Not recommended	1
Recommend without enthusiasm	2
Recommend fairly strongly	3
Recommend strongly	4
Recommend with enthusiasm	5

Where there were two or more letters of recommendation for each applicant, the average score was obtained and rounded off to the nearest integer.

Since the Admissions Committee provided no rating of the applicant's essay it was dropped from the "admissions" function.

All criteria used in the computer "admissions" function were transformed to a "5" to "1" scale, with "5" being the optimum score. In cases where one or more criteria were missing, the criteria present were reweighted and the admissions function was computed on the remaining criteria. This reflects the procedure of the Admissions Committee, who used what information they had on an applicant in reaching an admissions decision.

The admissions function was computed by developing a weighted composite of GPA, recommendations, college rating and socio-economic status.

One of the first steps in the analysis was to assess the priorities assigned to the criteria used in selecting participants for the 1970 Program. To this end, each member of the Admissions Committee was sent a form and asked to give the percent of emphasis he or she assigned to the following selection criteria:

X_1 = Student Transcript

X_2 = Rating of School

X_3 = Socio-Economic Status

X_4 = Recommendations

X_5 = Essay

The percents of emphasis were summed for each criterion and each sum was divided by the eleven Committee members who responded to the request. These computations provided an "admissions" function.

Initially "essay" was included among the ratings assigned to the admissions criteria. Since there was no qualitative measure for "essay" in the student's file, it (X_5) was dropped from the computation of the "admissions" function.

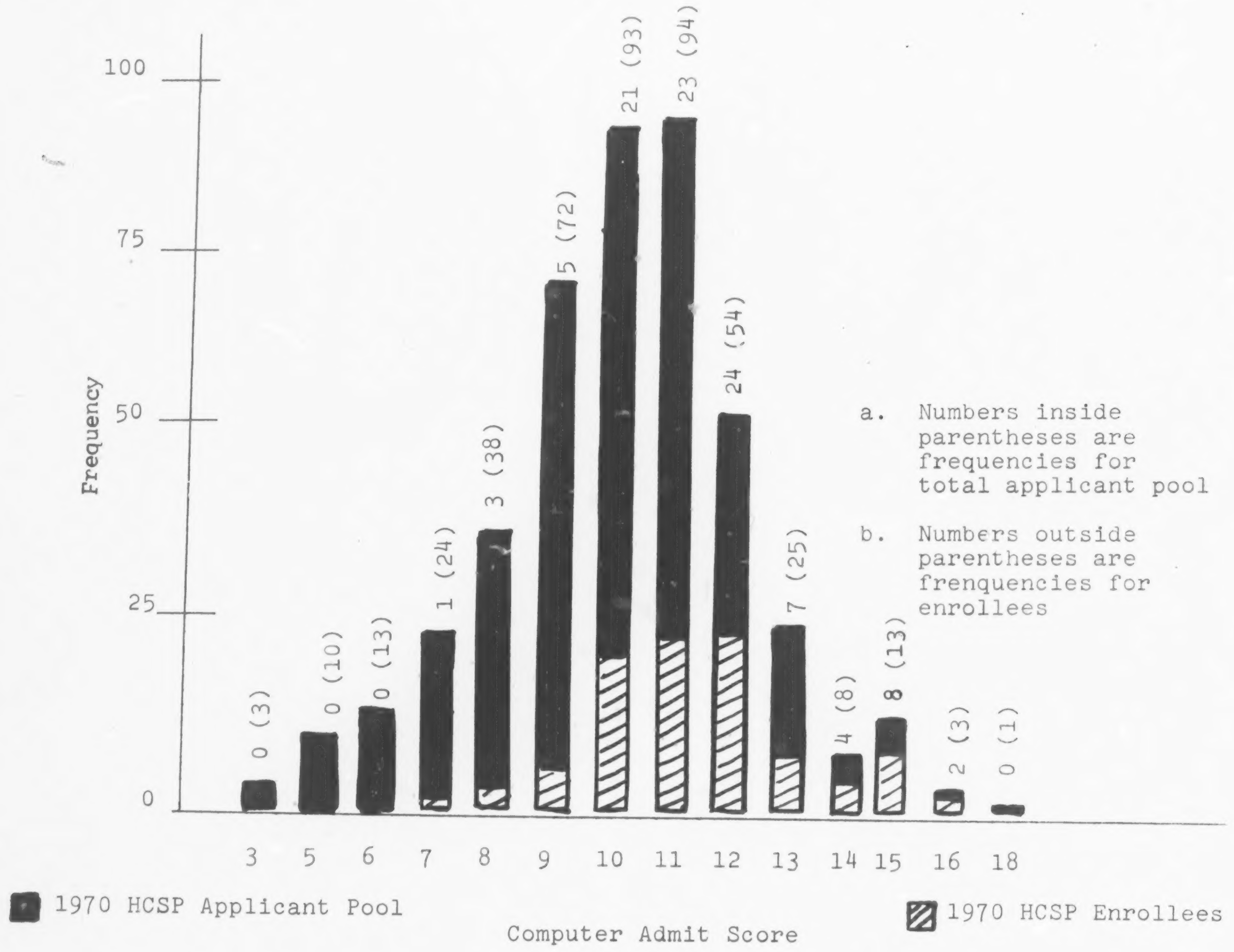
One additional step had to be taken, since the Admissions Committee gave heavy priority to applications from the 31 former HCSP students. This weight is represented by "X_6".

The resulting function Y was as follows:

$$Y = .3580X_1 + .1932X_2 + .2102X_3 + .2386X_4 + 1.2X_6$$

The parameters of distribution of the weighted admission scores (Y) are listed in Table 9. The same distribution is given in the histogram shown in Figure 1.

COMPARISON OF HISTOGRAMS OF COMPUTER ADMIT SCORES OF ENROLLEES TO TOTAL HCSP APPLICANT POOL



a. Numbers inside parentheses are frequencies for total applicant pool

b. Numbers outside parentheses are frenquencies for enrollees

Figure 1

Table 9

PARAMETERS OF THE FREQUENCY DISTRIBUTION OF COMPUTER ADMIT SCORES

Mean	10.112	Kurtosis	0.829
Mode	9.047	Skewness	-0.098
Median	10.201	Range	14.529
Standard Deviation	2.167	Minimum	3.000
Variance	4.697	Maximum	17.526

The histogram of the weighted composite admissions scores, superimposed on the histogram of the scores obtained by those actually admitted to the Program, gives support to the hypothesis that HCSP should be expanded. Examination of the histogram shows that the range of scores of the majority of those students judged admissible by the Admissions Committee would have allowed many more students to participate in the Program had funds been available.

Of interest is the fact that the highest frequency counts for the 98 enrollees exist between 10 and 12, based on the computer admit scores. The mean computer admit score is slightly greater than 10.

If HCSP had been able to take all applicants having computer admit scores of 11 or greater, 198 students could have been enrolled in the Program for 1970.

The overall histogram plot of computer admit scores for the enrollees resembles the histogram plot for all applicants. This means that there were many more applicants with indistinguishable qualifications who could have been admitted to HCSP had the Program been larger. Even though there was no control group in the strict sense of the word, these rejected applicants may serve to support the implications made through subsequent analyses in this report.

A one-way fixed effects model of analysis of variance. (ANOVA) was utilized to determine whether the decisions made by computer were related to those actually made by the Admissions Committee.

The admissions categories (immediate accept, eventual accept, eventual reject and immediate reject) were used as the classification variables, while the computer admit score was used as the dependent variable.

The null hypothesis tested was:

$H_o : U_1 = U_2 = U_3 = U_4$

where:

U_1 = mean of computer admit scores of immediate reject group

U_2 = mean of computer admit scores of eventual reject group

U_3 = mean of computer admit scores of eventual accept group

U_4 = mean of computer admit scores of immediate accept group

Since the F ratio resulting from the ANOVA is significantly greater than unity, we can reject the null hypothesis and conclude that the means of the computer admit scores for the four admissions categories are not equal (Tables 10 and 11). This allows us to say with some degree of assurance that the computer admit decisions distinguish among applicants in a manner similar to the decisions already made by the Admissions Committee.

Table 10

MEANS AND STANDARD DEVIATION OF COMPUTER ADMIT SCORES FOR ADMISSIONS CATEGORIES

Admissions Category	Number in Category	Mean	Standard Deviation
u_1	230	9.466	2.159
u_2	103	9.868	2.067
u_3	43	11.754	1.778
u_4	75	11.337	1.812

Table 11

RESULTS OF COMPUTER ADMIT SCORE ANOVA

Source	Sums of Squares	Degrees of Freedom	Variance	F Ratio	p Less Than
Within Groups	1786.9596	447	3.9974		
Between Groups	324.7202	3	108.2401	27.0073	0.001

Recommended Ways of Developing Admissions Procedures for Minority Programs

It is recommended that:

1) Programs such as HCSP develop methods for weighting the several criteria in a systematic fashion, similar to the derived admissions function Y analyzed in this report. Development of such decision-making processes is necessary when administering programs which purport to reach students who have heretofore not been reached.

2) Programs such as HCSP be expanded to accommodate the evidently large pool of students in this category. HCSP was able to admit only 98 students out of at least 198 who were presumably qualified. A less conservative analysis might have shown an even larger number of presumably qualified candidates.

SECTION IV

THE OVERALL EFFECTIVENESS OF THE PROGRAM IN ASSISTING STUDENTS TO ENTER GRADUATE TRAINING IN THE HEALTH PROFESSIONS

The final measure of the Program will be the successful entry of HCSP students into the health professions. Even then, however, one cannot determine positively what students would have accomplished without the Program. A subjective appraisal of the 1969 HCSP shows that 8 of the 9 students who participated and were subsequently eligible for admission to medical school were able to enter as first year medical students in September 1970. The ninth student was enrolled in a five-year program designed to give additional preparation prior to entry into medical school.

An evaluation of the effectiveness of the 1970 HCSP was done in much more detail and follows.

It is hypothesized that HCSP is greatly assisting minority students to get into health-related professions by providing them with motivation to apply, improved academic backgrounds, and contacts with medical schools that traditionally have not admitted minority group students in the past.

A follow-up questionnaire was sent to all 1970 HCSP applicants (total pool) in November 1970 which asked, among other questions, whether the student had applied to medical or dental school (see Appendix VI).

To test this hypothesis, the evaluation of the overall effectiveness of HCSP has been divided into two parts. The first part compares post-juniors in the following groups:

1) those who accepted admission and enrolled in the 1970 HCSP;
2) those who declined admission to the 1970 HCSP; and
3) those who were rejected for the 1970 HCSP.

A comparison was made between the fraction from each group who applied for admission to medical, dental or graduate school.

This analysis utilizes the chi-square (X^2) measure of association to make comparisons between the accept, decline, and reject groups and application to graduate or professional school. This analysis may tell something about the motivating power of HCSP, for obviously without the motivation to apply one cannot be admitted to graduate or professional school.

Results from the X^2 analysis in Table 12 permit us to conclude that the status of the post-junior applicants to HCSP is associated with their decision to apply or not to apply to medical or dental school. Further, the table shows that 88% (37 out of 42) post-juniors enrolled in the 1970 HCSP, as compared with 32% (30 out of 93) post-juniors who were rejected for admission to HCSP for 1970, applied to professional school. From this we can infer that students enrolled in HCSP are more motivated to apply to professional school than those who were rejected from admission to the 1970 Program.

Table 12

COMPARISON BETWEEN THREE POST-JUNIOR GROUPS APPLYING TO THE 1970 HCSP AND THEIR APPLICATION RATE TO MEDICAL OR DENTAL SCHOOL*

	Did Not Apply		Applied		Total	
	No.	%	No.	%	No.	%
Enrollees	5	11.9	37	88.1	42	100
Declinees	5	31.3	11	68.8	16	100
Rejectees	63	67.7	30	32.3	93	100
TOTAL	73		78		151	

* Data obtained from AAMC as of March 5, 1971

X^2 computed = 38.22

df = 2

Significant beyond 0.0005

Table 13

ACCEPTANCE RATES OF 1970 HCSP PARTICIPANTS TO MEDICAL AND DENTAL SCHOOL *

	Not Accepted		Accepted		Total	
	No.	%	No.	%	No.	%
Enrollees	8	21.6	29	78.4	37	100
Declinees	3	27.3	8	72.7	11	100
Rejectees	17	56.7	13	43.3	30	100
TOTAL	28		50		78	

* Data obtained from AAMC; correct as of May 10, 1971

X^2 computed = 9.25

df = 2

Significant at 0.01

The X^2 measure of association was also utilized in determining the impact that HCSP has had on the number of its applicants that have been accepted in a professional school. This analysis attempts to show whether HCSP assists students in gaining admission to graduate or professional school over and above motivating them to apply. Comparisons were made between the same groups as when testing the motivating power of HCSP: 1) enrollees, 2) declinees, and 3) rejectees. Table 13 shows the comparison between the groups when cross-tabulated by their acceptance or rejection to medical or dental school.

We conclude from the results of the analysis in Table 13 that acceptance of a post-junior applicant to medical or dental school is related to whether he was an enrollee, declinee or rejectee in HCSP. If we examine the enrollee and rejectee groups more closely, we find that 78% (29 out of 37) of all HCSP participants who applied to professional school were accepted for admission. Further comparison between the enrollee and rejectee groups suggests that a student's participation in HCSP provides a greater chance for him to be accepted into medical school than a student who was rejected from admission to the Program.

It should also be noted that three of the eight declinees accepted to professional school had been former participants in special summer programs at Harvard (HCSP 1969) and elsewhere. We feel that this played a part in their being accepted to medical or dental school. Accordingly, the X^2 test in this case tends to underestimate the degree of difference among the three groups.

SECTION V

FORMAT OF THE PROGRAM

Major decisions concerning the format and other organization of HCSP for 1970 were vested in an ad hoc Committee appointed by the Dean of the Harvard Medical School. The Committee consisted of 11 members, seven of whom were faculty or staff members at Harvard Medical School (HMS) and two of whom were black medical students from HMS. The chairman of the ad hoc Committee was Robert S. Blacklow, M.D., an officer at HMS, who also served as the Director of the Program. Managerial and operational aspects of the Program were carried out by Reid E. Jackson II, at that time a doctoral candidate in Science Education at the Harvard Graduate School of Education. He served as Coordinator-Head Tutor.

The basic format for HCSP was established in 1969, the initial year of the Program. This same format, with minor changes was utilized in 1970. It was patterned after the Intensive Summer Studies Program (ISSP) which was conducted jointly by Harvard, Yale and Columbia Universities from 1965 to 1970.

Since ISSP directed its major efforts toward English and Social Science, a modification of this program design was needed to fit the purpose of HCSP. Therefore the following format for HCSP was decided upon.

1) Enroll each student in a small group seminar in biology, physics, chemistry or mathematics to be called academic tutoiral and patterned after the Harvard College tutorial of selected readings and discussion.

2) Enroll each student in a regular Harvard Summer School course in the sciences or mathematics.

3) Have each student spend at least one afternoon per week observing or participating in a hospital-related health care activity under the supervision of a physician.

4) Have available individual compensatory tutorials as required and supplemental tutoring as desired.

Refinement of the suggested format led to the formation of the 3 major constituents of HCSP for 1969 and 1970. They were:

1) Academic Course Work

2) Academic Tutorial

3) Clinical Tutorial

Academic Course Work

In the academic course work, each student in the Program chose from the biology, chemistry, physics and mathematics courses offered in the Harvard Summer School. Students were to be counselled in their selection of a course by tutors and other officials of the Program but the final selection would be left up to the student. It was felt that selection of the courses by the students would fall into 3 categories: 1) advanced course selection by those students from lesser-known colleges with good grade point averages who needed to demonstrate that the work done at their home institutions was comparable to the work done at a major university; 2) advanced and intermediate course selection by those students who would be desirous of doing intensive study that would not normally occur at their home institution; and 3) review course selection by those students who had similar courses at their home institutions but did not obtain adequate comprehension while enrolled. A list of Academic Course offerings in the 1970 HCSP is shown in Table 14.

In special cases when the students were interested in social medicine or psychiatry, they were permitted to take courses in sociology or psychology rather than natural science courses. Permission to take these special courses had to be obtained from the Coordinator-Head Tutor. His decisions were based on the number and quality of science or math courses the students had taken at their home institutions and on how well they had performed in those courses. Usually this privilege was limited to students returning to HCSP for a second summer.

A Sub-Committee on Education of the ad hoc Advisory Committee was appointed with the major purpose to develop courses that could provide maximum learning experiences for the HCSP students and also be acceptable to the Harvard Summer School as a regular course offering. Membership on the Sub-Committee consisted of two HMS faculty members and a former HCSP participant who entered his first year at HMS in the fall of 1970.

Table 14

NATURAL SCIENCE COURSES AVAILABLE IN THE HARVARD SUMMER SCHOOL

FOR HCSP STUDENTS - 1970

BIOLOGY

1. Introduction to Biology (Botany). Biol S-1a
   An introductory course in the biology of plants on a predominantly evolutionary theme, with particular emphasis on the functional aspects of higher plants, their structure, physiology, growth and development.

2. Introduction to Biology (Zoology). Biol S-1b
   An introduction to the classification, structure and activities of animals. The course also deals with some of the relationships of animals to their environment, including their relations to one another and to man. The fundamental facts concerning evolution and genetics are treated.

3. Population Biology. Biol S-144
   This course will study populations by numbers of individuals and by structure. On numbers: exological considerations. On genetic structure: systems of mating, selection, migration and mutation, genetic drift (mathematical models).

4. General Biochemistry. Biol S-195
   This course deals with the characterization and the metabolism of the major chemical components of living matter. Emphasis is placed on the structure and function of proteins and nucleic acids, the general properties of enzymes, and on the role of these catalytic proteins in metabolism.

5. Natural Sciences. S-123
   Selected topics in cell biology.

CHEMISTRY

1. Introductory General and Inorganic. Chem S-1
   This course is intended to supply a comprehensive survey of the principal aspects of chemistry for the general student.

Table 14 (continued)

2. Organic Chemistry - Elementary Course. Chem S-20
The systemic study of the most important classes of carbon compounds, including their preparation, structure, physical properties, and reactions. Modern structural and reaction theory is invoked to interpret the factual aspects of the subject.

3. Quantitative Analysis. Chem S-40a
This course deals with the fundamentals of gravimetric and volumetric analysis, with a brief discussion of electrolytic, colorimetric, and other special methods also included. Numerical problems involving theoretical principles, stoichiometry, and equilibria relationships will be emphasized.

4. Natural Sciences. S-103
An introduction to atomic and molecular structure as a basis for understanding the physical and chemical properties of living matter.

5. Elementary Physical Chemistry. Chem S-60a
This course constitutes an introduction to the theoretical and interpretive aspects of chemistry. Thermodynamics, kinetic theory of gases with a more general treatment of statistical mechanics, and electrochemistry will be developed and applied to equilibria systems of chemical interest.

6. Elementary Physical Chemistry. Chem S-60b
Topics to be considered include elementary quantum theory, atomic structure, valence theory, molecular structure determination, molecular spectroscopy, and chemical kinetics.

MATHEMATICS

1. Analytical Geometry and Introduction to Calculus. Math S-1a
This course is open to students who have had no college work in mathematics and is the normal prerequisite for all later mathematics courses. Topics covered include analytic geometry of the straight line and circle, and the differential calculus of algebraic and trigonometric functions with applications.

2. Analytical Geometry and Introduction to Calculus. Math S-1b
Topics include the analytic geometry of conic sections, polar coordinates, the differential and integral calculus of logarithmic exponential functions, and a systemic treatment of integration with applications in the physical and social sciences.

Table 14 (continued)

3. Intermediate Calculus and Linear Algebra. Math S-21a Covers matrices, determinants, functions from one vector space to another: the differential, partial derivatives, maxima and minima; multiple integrals and linear differential and partial differential equations.

5. Introduction to Higher Algebra. Math S-106a Topics include n-dimensional vector algebra over general fields, linear transformations and matrix theory, applications to simultaneous linear equations, eigenvectors and eigen values, and the reduction of quadratic and Hermatian forms.

As a result of the data collected from an informal survey of participants in the 1969 Program, the Sub-Committee suggested the development of two courses: 1) Cell Biology and 2) Topics in Inorganic Chemistry. A Cell Biology course, Natural Sciences S-123, was developed and proved to be quite successful as well as popular among both the HCSP students and the other Harvard Summer School students. In fact, it had one of the highest enrollments of all the biology courses offered. The course included topics in cell structure and metabolism, cell movement, cell heredity and cell interaction.

The planned course Topics in Inorganic Chemistry never got past the initial stages of development. There were two reasons for this: first it was felt that students would be reluctant to take this course since in all probability they would still have to take an inorganic chemistry course with a laboratory to satisfy requirements of their home institutions and medical schools; second, it was difficult to find persons to teach the course because of its late planning.

Academic Tutorial

The academic tutorial was planned so that students with similar academic backgrounds would be placed in groups of four or five and headed by an academic tutor. The academic tutor would attempt to teach a specific science or math course commensurate with the group's prior academic training. An attempt was made to match the tutor's interests with the students' needs. The academic tutorials were to be informal so that good tutor-student interaction would provide maximum learning experiences. The material covered within the academic tutorials would depend upon the professional knowledge and expertise of the tutor. Each academic tutorial met at least three times a week or an average of eight hours per week.

Academic tutorial assignments for 1970 were made differently than they were the previous year. In 1969, the academic tutors were selected first and then students were assigned to them based on the tutors' expertise. In the 1970 HCSP, students were selected first and placed in groups of four or five with similar course requests and needs. Academic tutors who possessed special training in the areas of the group assignments were then hired.

The Academic Tutorial offerings in the 1970 HCSP are summarized in Table 15.

Table 15

Academic Tutorial Offerings for 1970

Subject	Number of Tutorials
A. Biology	
1. Introductory Biology	3
2. Developmental Biology	1
3. Biochemical Bases of Behavior	1
4. Molecular Biology	2
5. Immuno-Biology	1
6. Computers and Biomedical Applications	1
B. Chemistry	
1. Introductory Chemistry	3
2. Molecular Bonding and Structure	1
3. Biophysical Chemistry	1
4. Physical Chemistry	1
5. Organic Chemistry	4
6. Biochemistry	3
C. Mathematics	
1. Calculus	1
2. Advanced Mathematics	1
TOTAL	24

Clinical Tutorial

In planning the clinical tutorial in 1969, it became apparent that this phase of the Program would have to work within the time constraints of the physicians and dentists who were to donate their services to the Program. It was decided that at least once a week students should visit a hospital associated with Harvard for a period of three to four hours. Students were to be equally divided among the hospitals that would participate in the Program. At the hospitals the groups were to be further sub-divided with a physician serving as the clinical leader. Each hospital was to select a chief clinical tutor from its senior staff to coordinate all of the activities that would occur during the summer.

In the 1970 clinical tutorials, the students were divided into groups of 14 and assigned to one of the seven participating hospitals. The head clinical tutor met with the chief clinical tutors or their representatives prior to the Program, in an attempt to standardize the kinds of experiences they would offer to the students during the summer. Although this meeting proved fruitful, great variation occurred from hospital to hospital as will be shown later in the evaluations of the clinical tutorial. A list of the hospitals and clinics participating in 1970 Clinical Tutorial is shown in Table 16.

Table 16

Hospitals and Clinics Participating in the 1970 HCSP

1. Harvard School of Dental Medicine
2. Children's Hospital Medical Center
3. Beth Israel Hospital
4. Cambridge Hospital
5. Massachusetts General Hospital
6. Boston City Hospital
7. Peter Bent Brigham Hospital

The Boston Hospital for Women and the Massachusetts Mental Health Center were not asked to participate in 1970 since many of the 1969 students felt that their experiences were too limited at these places.

Administrative Structure of HCSP

In January of 1970, Robert S. Blacklow, M.D., HMS Assistant Dean and Assistant Professor of Medicine, was appointed Director of Health Careers Summer Program by the Dean of Harvard Medical School. In addition, Dr. Blacklow was also asked to serve as Chairman of the ad hoc Committee. His major role in both capacities was to serve as general overseer of the Program. This included both the financial and organizational aspects of HCSP. Dr. Blacklow had served as a Clinical Tutor in the 1969 HCSP.

Mr. Thomas Crooks, Director of the Harvard Summer School was the Administrative officer from the Faculty of Arts and Sciences who served as coordinator within the framework of the Summer School. Appointment of all Academic Tutors, the Head Tutor and arrangement of the academic part of the HCSP as well as living accomodations and meals were coordinated by the Harvard Summer School and his office.

In April 1970, Reid E. Jackson II was asked by the ad hoc Committee to serve as Coordinator-Head Tutor for the Program. Major duties associated with this position included management, organization and operation of all components of HCSP. Problems arose the previous year when the positions of Coordinator and Head Tutor were held by two separate persons. To avoid these problems in 1970, the two were combined and directed by one person.

Dr. Matthew Budd, Assistant Professor of Medicine at Beth Israel Hsopital who served as Head Clinical Tutor in 1969 continued in that position in 1970. His task was to direct and coordinate the activities at the seven hospitals participating in the Program.

Selection of Tutors

Academic Tutors. All of the academic tutors for 1970 were selected by the Coordinator-Head Tutor with the approval of the Harvard Summer School. His criteria for selection were based on the expertise of the individuals in a particular science or math area, experience in a teaching role, detectable sensitivity to the problems of minority groups, and if possible minority status.

Twenty-four academic tutors were selected approximately one and one-half months before the Program started. Of this group, it was possible to select only six minority tutors, and these six were black. Some of the academic tutors were returnees from the previous year's Program. They were asked to assist in briefing the neophyte academic tutors about some of the problems they encountered in 1969.

Tutor selection for 1970 was not limited to the Harvard community and some of the tutors came from MIT, Brandeis, Tufts, University of Rochester and Northeastern. All of the academic tutors mwt with the Coordinator-Head Tutor twice before the Program began. These meetings allowed the new academic tutors to become acquainted with the rationale and organization of the Program, the returning tutors a chance to learn of the changes in the Program, and all the tutors a chance to familiarize themselves with their students. The majority of the tutors possessed some teaching experience since they had either taught in the Harvard College tutorial program or worked as laboratory instructors.

Approximately 60% of the academic tutors had already been awarded the doctorate degree. All of the academic tutors, however, possessed at least doctoral-candidate status. Three of the academic tutors were medical students at HMS who had done graduate study in a specific science area.

Clinical Tutors. The clinical tutors were again selected by the chief clinical tutor at each hospital and the chief clinical tutor at the School of Dental Medicine. Many of the clinical tutors were volunteers who were aware of HCSP through conversations with ad hoc Committee members. Others were selected because of their earlier associations with students in their pre-clinical or pre-medical phase of training.

Selection of Other Personnel

It was felt that those students applying to medical school in the fall of 1970 would benefit greatly from discussions with students who were presently enrolled in medical school. Consequently, two first-year medical students from HMS both of whom were black were selected as student advisors. Both were former participants in ISSP. They were to provide the HCSP students with their perceptions as to "how it is in medical school," advise them in selecting courses at their home institutions that might be helpful in medical school and give them general information and assitance in making application to medical school.

Since it was realized that many of the HCSP participants would have difficulty adjusting to the Harvard community and Cambridge in general, a counselor was hired to help the students with these and other personal problems. To diminish the paternalistic connotation that accompanies the word "counselor," a black guidance counselor from a local school system, was known as the "Program Rapper."

A special note should be made concerning the Administrative Assistant of the Program who was selected in 1968, the initial year of the Program, and has served ever since in that capacity. Up until 1970, she was the only full time employee of HCSP. Her duties are varied and include processing of applications, serving as secretary for all committee meetings concerning HCSP, and general operation of the HCSP office.

Preparation for the Program

Operation of the 1970 HCSP was scheduled for June 28th through August 24th, the same time period as the Harvard Summer School.

Prior to the start of the Program, each of the academic tutors corresponded with each student in his or her group, sending him a course outline and brief description of his tutorial. He also informed the students about his personal background and academic interest. (See Appendix VII for a typical course outline and letter sent by an academic tutor to his students.)

Travel information which explained the disbursement of travel expenses was sent to each of the participants during the middle of May. The students were told that they could select the mode of transportation they desired since the expenses would be absorbed by HCSP. The students were also sent a travel form which when completed and returned would include: 1) the place from which they would be traveling, 2) the approximate distance from their point of departure to Boston, 3) their mode of transportation, 4) the exact one-way fare from their point of departure to Boston and 5) the address at which they could be contacted before their departure to Boston.

Other travel information included the approximate fares from all of the local transportation terminals (airport, train terminal, bus station) to Harvard. The students were also asked not to bring cars because of the parking problems in Cambridge. (See Appendix VIII)

At the end of May each student was sent a general information memorandum concerning housing, average weather conditions in Boston during the summer, formal course work, academic tutorial, clinical tutorial and registration. A copy of this general information memo sent to the 1970 students is found in Appendix IX.

The 1970 ad hoc Committee adhered to the same policy as the multi-purpose group for 1969 in deciding that the students should take all of their academic courses in Cambridge and be housed in Harvard Yard (the main Harvard Campus). This decision was made since the Harvard Medical School is located some distance from the main campus and the students would be isolated from the majority of the summer school activities. In addition, by having the opportunity to participate in summer school activities, HCSP students would have the feeling of belonging to the total Harvard community. A summer office for HCSP was located in Harvard Yard so that frequent association between students and staff could exist.

In early June, letters were sent to ninety-nine medical schools, informing them of HCSP and its purpose. The medical schools were asked whether they would like to send admissions office representatives from their respective schools to observe the Program and interview HCSP participants. Each medical school was asked to provide two dates from which the HCSP office could select. Twenty-four schools replied in the affirmative and interviews with representatives of these medical schools were scheduled throughout the entire summer for interested HCSP participants. Table 17 lists the medical schools visiting HCSP in 1970. HCSP neglected to invite the Dental Schools in 1970, but will do so in 1971.

The Program in Action

The first meeting with the 1970 particpants provided an opportunity for general announcements and introduction of HCSP staff to occur. After the general meeting each academic tutor assembled his group of students to inform them specifically how the tutorial would be run. Since the academic tutors had previously corresponded with each student in their group, the "getting to know you" period was accomplished with great ease. The pre-assignment of students to tutorial groups had also been accomplished very well; only 8% of the students asked to be changed to another group.

Many of the students who were returning to HCSP for a second time inquired about the types of experiences they would be receiving in the clinical tutorials. No provision had been made for graduation of activities to occur for the second year participants and many of them received experiences similar to the previous summer even though they were assigned to different hospitals. This produced a decline of interest in the clinical tutorial for the returning students since many of them felt that they should have a more active part in the hospital life, even if it were no more than washing a sick patient.

Table 17

MEDICAL SCHOOL VISITS TO THE 1970 HEALTH CAREERS SUMMER PROGRAM*

Medical College of Alabama
Birmingham, Alabama

Bowman Gray School of Medicine
Winston-Salem, North Carolina

University of California San Francisco Medical Center
San Francisco, California

University of Cincinnati College of Medicine
Cincinnati, Ohio

University of Colorado Medical Center
Denver, Colorado

Dartmouth Medical School
Hanover, New Hampshire

Georgetown University School of Medicine
Washington, D.C.

Indiana University School of Medicine
Indianapolis, Indiana

University of Iowa College of Medicine
Iowa City, Iowa

Johns Hopkins University School of Medicine
Baltimore, Maryland

University of Kansas School of Medicine
Kansas City, Kansas

Mt. Sinai School of Medicine
New York, New York

University of Maryland School of Medicine
Baltimore, Maryland

New York University School of Medicine
New York, New York

Table 17 (continued)

SUNY Downstate Medical Center
Brooklyn, New York

University of North Carolina School of Medicine
Chapel Hill, North Carolina

Pennsylvania State University College of Medicine
Hershey, Pennsylvania

University of Pittsburgh School of Medicine
Pittsburgh, Pennsylvania

University of Rochester School of Medicine
Rochester, New York

Tufts University School of Medicine
Boston, Massachusetts

University of Vermont College of Medicine
Burlington, Vermont

University of Virginia School of Medicine
Charlottesville, Virginia

Washington University School of Medicine
St. Louis, Missouri

Yale University School of Medicine
New Haven, Connecticut

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*Other than Harvard Medical School

To speed up and simplify the registration process, the Registrar's office made arrangements for all of the HCSP students to be registered at the HCSP summer office on the first day of the Program. This arrangement worked very well since it gave the HCSP and Registration office an opportunity to obtain information immediately about the types of academic courses the students were taking.

Problems involving the availability of chemistry courses arose again, as in 1969. In the inorganic chemistry courses, permission was granted by the chemistry department for HCSP students to take only the lectures without laboratory. Only three students accepted this type of arrangement and enrolled in the course. Near the end of the summer, all three of these students expressed to the Coordinator-Head Tutor that even though they were not taking the laboratory part of the course, the lectures alone were quite fast-moving and demanded much of their time considering all of the other HCSP academic responsibilities they had. The statements of the students were verified by the instructor of the inorganic chemistry course in a letter written to the Coordinator-Head Tutor. He also suggested that HCSP work with the Summer School in developing a course that would present only the basic concepts of inorganic chemistry and would not be as time consuming.

The organic chemistry course also presented a problem since a full year' college course was being covered in an eight-week period. As a result, many of the academic tutors advised their students against taking this course. They felt that it would be too demanding and that the amount of material learned would not be commensurate with the time expended. Three of the academic tutors had taught in the course before and were aware of its diffuculties.

Disbursement of expense money was accomplished during the first two days of the Program. All students were given $40.00 for a book allowance and $100.00 for personal expenses. The personal expense allowance was issued in two payments.

Students were also to be given a stipend at the end of the summer to make up in part for forgone summer earnings. A variable stipend according to need was suggested by students of the 1969 Program. (1) This policy was initiated for 1970. This caused a major problem for the Program since some students would receive $500 while others would receive only $250. Some students said that they had applied for the smaller stipend in hopes of enhancing acceptance to the Program. When the Program began, stipend levels had not been announced. As a result students were concerned as to who would decide which students would receive what stipend; they confronted the Visiting Committee of the Board of Overseers to visit the Harvard Summer School at their annual meeting and issued the following statement:

A Statement of Demands of HCSP 1970 Students

To: The Dean of Harvard Medical School

We, the Harvard Health Careers Summer Program students came into the Program under the assumption that we would receive a $500 stipend compensating us for the money we would have received had we worked this summer. Some students only requested $250 feeling that this would enhance their acceptance into the Program; therefore, the $250 was not a measure of their true need. We find it quite senseless to receive less money in 1970 than we did in 1969 when the cost of tuition fees and the cost of living is higher. It seems ironic that Harvard is benefitting more from the Program than we are. They receive money for tuition, room and board. Their graduate students receive at least $1,500 for supposedly tutoring. Why must students bear the Program cuts while new job titles are being added, and salaries continue to rise or remain the same? What is Harvard contributing to the Program?

DEMANDS

1. We demand a minimum stipend of $500 per person participating in HCSP 1970. Anything less than this will be considered a breach of contract.

2. We demand that in the following summers a financial statement be sent guaranteeing a stipend equivalent to what we would most likely have earned during summer employment prior to the start of the summer program.

3. We demand a presentation of the HCSP 1969-70 line by line budgets.

   a. We demand to know the sponsors of HCSP and how much money each contributed for the summer of 1970.
   b. We demand to see a listing of all salaried employees, titles and job descriptions, and reasons for the creation of new positions.

The administration of HCSP agreed with the students in that it would be difficult at this point to determine the differences in the financial needs of students. Therefore, after many meetings, the situation was rectified and all students were given a stipend of $500.

The students also requested a meeting with Dr. Robert H. Ebert, Dean of the Harvard Medical School. Here they expressed their dissatisfaction with the concern that the nation's medical schools have had for minority group health care problems. Dean Ebert was told that Harvard should take a leadership role in making the necessary changes which would realistically make the medical profession accessible to minority group members. Prior to the meeting with the Dean, the students issued the following formal statement:

> Initially HCSP was founded in the hope that the shortage of doctors serving the needs of minority groups in urban areas would increase. However, close examination reveals some of the shortcomings of HCSP. In order for HCSP to be effective, some changes must occur in the medical community.
>
> 1. Medical schools must expand to meet the awesome health needs of the country, in particular urban areas.
>
> 2. Qualifications for acceptance to medical schools must be reevaluated. It is unfeasible for minority students to academically compete with top students in the country.
>
> Harvard should set the pace for these changes rather than merely being satisfied by proving that we can take regular courses at Harvard and do well.
>
> Moreover, HCSP has more potential than just stamping us with the 'Good Housekeeping Seal of Approval.' Harvard's commitment should be to the expansion of similar programs such as HCSP but also to the innovations that must occur within the medical community.

Another problem arose because Dr. Robert S. Blacklow, the Director of HCSP, is white, and Reid Jackson, who served as Coordinator-Head Tutor, is black. Dr. Blacklow acted as the general overseer; total management of the Program, with the exception of finances, was vested in Mr. Jackson. The students perceived this arrangement as an attempt by Harvard to keep control of the major policy decisions by having a white person in charge of HCSP. They felt that the Coordinator-Head Tutor position was more like "window dressing" and suggested in their meeting with Dean Ebert that one person be given the total responsibility for directing and coordinating the Program. They also specified that this person be of minority status.

In a subsequent meeting with Mr. Thomas Crooks, Director of the Summer School, a group of students (speaking for the entire HCSP) discussed the charges for the use of the recreational facilities. As a result of the meeting, the students were provided with free passes that would permit them use of the swimming pool and other athletic facilities.

A speaker series was provided for the students each week of the Program. Some of the speakers were invited by the HCSP staff and some were invited by the students. The majority of the speakers held question and answer sessions which dealt mostly with medical school admissions and entrance requirements. The students were given notification of the speakers through weekly HCSP news bulletins that were sent to their dormitory rooms.

Three social events were planned for the participants by the HCSP staff. The first was a dance which was held in conjunction with ISSP the first weekend of the Program. This gave the students an opportunity to become informally acquainted with each other. Mid-way during the Program, a beach party was given. This proved to be a successful outing since many of the students expressed that they needed a "breather" from their daily academic grind. The culminating social activity was a banquet and dance held on the 7th week-end of the Program.

Collection of Data

During the summer, data used in the evaluation of HCSP were collected by several instruments and methods. The questionnaires follow. (See Appendix X)

Student's Evaluation of Regular Courses. This questionnaire was given to the students at the end of the third and sixth weeks of the Program. It provided information as to how the instructor conducted the course and the students' comparison of the course with those taken at his home institution.

Student's Evaluation of Academic Tutorial. Given at the end of the third and sixth weeks, this questionnaire provided information concerning how the tutorial was conducted, the students' perceptions of rapport between themselves and the academic tutors, and the students' evaluation of the tutorial. Also by giving the questionnaire at two different time periods it was hoped that the students' changes in perceptions could be observed.

Student Report on Clinical Tutorial. This questionnaire was given at the end of the third and sixth weeks of the Program and allowed HCSP to obtain information concerning the kinds of experiences occurring at each hospital and the circumstances in which these experiences occurred.

Academic Tutor's Evaluation Questionnaire. The information obtained from this form provided HCSP with an evaluation of each student by his academic tutor. This included the academic tutor's perception of the student's academic ability as well as his potential for a career in a health-related profession. The academic tutors also evaluated the Program in general. Questionnaires were given at the end of the third and sixth weeks.

Clinical Tutor's Report on Clinical Tutorial. This questionnaire was similar to the one given to the students and gave the clinical tutors' report on the types of experiences that were provided at their respective hospitals. The questionnaire was given at the end of the third and sixth weeks.

Subjective Evaluation. Special note should be made of this instrument since it allowed the students to express themselves freely about all aspects of HCSP. At the end of the seventh week the students were given a form which asked one question: "How would you organize HCSP it you were in charge?" These subjective expressions provided HCSP with information concerning dormitory arrangements, social activities, all components of HCSP and the administrative structure of the Program. Each student's form was read and a subjective questionnaire was developed from recurring statements about all phases of HCSP. After development of the questionnaire, each student's original expressions were then transcribed to conform to questionnaire type response.

In addition to the student and tutor questionnaires, three sets of observations of the Program were made as follows:

Taped Interviews. (Appendix XI). Information was obtained by selecting eleven students at random, according to geographical locale, to get their perceptions of the Program.

Student Advisor Reports. (Appendix XII). This report allowed HCSP to obtain the perceptions of two black medical students at HMS concerning the operation and effectiveness of certain aspects of the Program.

Counselor's Report. (Appendix XIII). This report provided HCSP with information concerning the personal problems of the students that occurred during the summer.

SECTION VI

FINANCING

The average cost per student for the HCSP came to approximately $2,000. Actual expenditures for the 1970 HCSP by budgetary line items are included in Table 18. Of this amount, student costs came to approximately $160,000; expenses for the Academic Tutorial and the Clincal Tutorial came to approximately $30,000.

The bulk of the costs per student were distributed as follows:

Dormitory and board	$320
Tuition	$430
Registration and health fees	$ 25
Laboratory fees	$ 20
Book allowance	$ 40
Travel allowance	$150 (approximately)
Stipend	$500
Personal expense and living allowance while at the Summer School	$100

In the two and a half years of its existence, the HCSP has received operating funds from the sources listed in Table 19.

In 1969 the funding picture for HCSP was relatively good. Dr. Martin Luther King's death had brought upon the private sector an increased commitment to minority affairs. Relatively few supported programs in minority medical education were in

Table 18

ACTUAL EXPENDITURES FOR 1970 HCSP
BY BUDGETARY LINE ITEM

Personnel	$ 6,538.85
Printing and Supplies	1,214.77
Telephone (partial)	47.08
Postage (partial)	57.90
Travel - students and recruiting	36,220.63
Living Allowances, Misc.	48,234.33
Transfer - Dental School	500.00
Meetings	1,868.08
Lecture Honoraria	50.00
Xerox	136.68
Services - Summer School	97,596.70
General Administration	1,600.00
TOTAL	$194,065.02

Table 19

SOURCES OF HCSP FUNDING BY YEAR

1969
Budget - $105,000

Macy Foundation	$15,000	
Rockefeller Foundation	50,000	
	$65,000	Deficit - $40,000

1970
Budget - $194,065

Day Foundation	2,000	
Weir Foundation	10,000	
Macy Foundation	24,000	
National Fund for Medical Education	30,000	
Rockefeller Foundation	50,000	
Sloan Foundation	75,000	
	$191,000	Deficit - $ 3,065

1971
Estimated Budget - $220,000

Funds in hand as of May 10, 1971:

Macy Foundation	$24,000
Grant Foundation	25,000
National Fund for Medical Education	30,000
Rockefeller Foundation	50,000
Sloan Foundation	75,000
	$204,000

Decisions Pending:

Day Foundation	$ 2,000
Charles E. Merrill Trust	10,000
National Urban Coalition	50,000

existence. Yet certain foundations such as Macy and Rockefeller were becoming interested specifically in this field. The funding dollar was limited, but so was the competition for it. The reason the HCSP ran a deficit in its first year was the fund-raising began late and there was a misunderstanding about one foundation's verbal commitment.

In 1970, more foundations were turning toward minority medical education and the HCSP was thus able to attract grants from the National Fund for Medical Education, the Weir Foundation, the Sloan Foundation and the Day Foundation. In many ways, however, the market was becoming tighter. Various minority group programs--not necessarily medically oriented--developed all over the country and the total fiscal need was rapidly being exceeded by the private support available.

In 1971, HCSP fund-raising began to encounter new kinds of problems. First, several sources which had supported this type of effort in the past were beginning to change their priorities. One example is the Macy Foundation, whose 1971 grant of $24,000 is terminal. In the future, Macy will concentrate its efforts toward premedical advising and toward programs at the faculty level.

Another problem was apparent in dealing with several potential sources, such as the Field Foundation. Although Field appeared interested in the goals of HCSP, that foundation felt strongly that its educational dollar should be invested in predominantly Southern black schools. Many other foundations shared this conviction.

Third, and perhaps even more critical, an issue has arisen from the fact that HCSP has entered its third year. It has been traditional for foundations to view their role as providing "seed money" for worthy projects. Few private foundations ever make grants beyond three years, and it would be false optimism to hope for long-term support from institutions such as Rockefeller, Macy or Sloan. In its third year the HCSP is no longer considered "innovative" and its funding appeal is therefore greatly dampened. There is on the part of many private and Governmental granting agencies an underlying assumption that somehow educational programs such as the HCSP should become self supporting after their first two or three years. This assumption has extremely unfortunate consequences and has caused many programs to phase out just at the point when they are becoming most effective. The HCSP is now greatly threatened by this same phenomenon. As an example of this, the Association of American Medical Colleges, (AAMC), although not allocating private foundation money, has refused a grant request which would have allocated OEO funds to the HCSP on the grounds that HCSP was already an "ongoing project." The AAMC wished only to finance new demonstrations. However, we can be reasonably confident that the HCSP will receive sufficient funding for this coming summer (1971).

It is apparent that the progress report of the HCSP evaluation submitted in February 1971 to the Department of Health, Education and Welfare, has been promising enough to encourage foundations to commit themselves for a third year of support. It is also quite apparent, however, that in the future the HCSP will be unable to generate sufficient money from the private sector. New sources of support must be found or the HCSP and programs like it can be expected to terminate at the close of their 1971 sessions, or shortly thereafter. Such Federally-sponsored legislation as the Health Education Assistance Act, funds from the Bureau of Health Manpower Education and from the Bureau of Higher Education offer the only hope for allowing these programs to continue. Once again, in long-range and large-scale projects one must look to the Federal dollar for continuing support.

SECTION VII

STUDENTS' AND TUTORS' PERCEPTIONS OF THE ACADEMIC COMPONENTS OF HCSP

In this section we present evidence on the strengths and weaknesses of the academic courses and tutorials as seen by the students themselves and by their tutors. This information was secured by means of three of the questionnaires described above: "Student's Evaluation of Regular Courses," "Student's Evaluation of Academic Tutorial," "Academic Tutor's Evaluation Questionnaire." Each of these instruments was administered at the end of the third week of the Program and repeated, with appropriate revisions, at the end of the sixth week. In instances where there has been a change of 10 percent or greater in the responses to any given question, data for both of the administrations are given. Otherwise the information reported below is based on the second set of questionnaires.

It should be noted here that the mean grade of the HCSP students in their course work was 2.87 (C+) and the mean grade in their academic tutorial was 3.19 (B-). This is commensurate with the average grade made by all students at the Harvard Summer School.

Students's Perceptions of Their Academic Courses

Examination of all courses taken by the 1970 HCSP participants shows that 72% of them were enrolled in courses that had more than 30 students. When asked how they felt concerning the number of students enrolled in their course, 27% of the participants stated that they wished the number had been fewer, 55 % stated that the number was about right and 14% were unsure.

Since most of the courses taken by the participants were of a size that tended to encourage lecturing on the part of the instructors, it is not surprising that 87% of the students reported that their instructors spent most of the class time lecturing. Only twelve percent said the instructors spent about half the time lecturing and half the time asking and answering questions. The students' reactions to the lectures thus become a matter of some importance. Sixty-eight percent of the students stated that they wished the instructors had spent less time lecturing and 60% wished the instructors has spend more time asking and answering questions.

In respect to the ease with which the lectures were understood by the students, well over half, 61% of them, said that they found the lectures sometimes easy to understand and sometimes hard to understand. Another 20% of the students reported that the lectures in the courses they took were usually easy to understand, and the remaining 19% found the lectures in their courses usually hard to understand.

In light of these reactions, it is probably fair to conclude that, although less emphasis on lecturing would have been preferred, the lectures to which the students were exposed were reasonably well-suited to their educational needs. Three factors, as reported by the students, may have helped to account for this outcome: 1) the use of course outlines 2) the use of daily lecture outlines and 3) the use of audio-visual materials. Seventy-four percent of the students said they received outlines of what was to covered in their particular courses and 66% of the students also received daily lecture outlines. The students reported that these outlines proved quite useful in studying for examinations and also in the preparation of research reports. Additionally 85% of the students reported that their instructors used audio-visual materials to help clarify the lectures.

Further proof that the courses taken by the HCSP participants were generally well-adapted to their needs is evident from their reports on the degree to which their academic backgrounds had prepared them for the courses they took. Forty-six percent of the students stated that they already knew some of what was being taught in their courses; 42% reported that they were previously unfamiliar with much of what was being taught but that they got along all right. Only 5% felt that the courses were over their heads and that their academic backgrounds prevented them from profiting adequately from the course. In short, most of the courses elected by the students appear to have been pitched at about the right level of difficulty.

When asked to compare the difficulty of their Harvard courses with similar science or mathematics courses taken at their home institutions, 42% of the students felt that the Harvard courses were about the same in difficulty, as courses at their own colleges. Twenty-eight percent of the students, on the other hand, stated that the courses at Harvard were definitely harder than similar courses they had taken at their own colleges.

Over-all, the courses taken by the HCSP participants received a favorable vote. Sixty-eight percent stated that they were glad they had enrolled in the courses they took, and only 12% stated they were they enrolled in their particular course. The remaining 20% of the students were not sure whether they were glad or sorry.

The students' various reactions to their course work provide a number of suggestions for the conduct of HCSP in the future. The following seem to stand out:

1) It would be helpful if students could receive in advance of registration specific information on such matters as the size of the courses from which they are to choose, the manner in which the courses are conducted. and the general level of difficulty of each as perceived by former HCSP students.

2) In all courses to be taken by HCSP participants the amount of straight lecturing might well be kept at a minimum so that more time can be given to interchanges between instructors and students. Where the size of a course makes lecturing necessarily the principal means of instruction, the lectures might be supplemented by optional discussion groups, led by teaching assistants, for students having difficulty with their course.

3) Course and lecture outlines should be provided routinely in all courses in which HCSP students are enrolled.

4) Heavy and wide-spread use of audio-visual materials should be further encouraged.

Students' Perceptions of their Academic Tutorials

The component of HCSP given prime emphasis has been the academic tutorial. The reasoning behind this feature of the Program is that such a tutorial, consisting of four or five students, meeting with a tutor at least three times a week, would provide an informal academic atmosphere in which the tutor and the students could concentrate on a particular aspect of science or mathematics and interact freely and effectively, often on a one-to-one basis. That is, it was expected that the tutor would be able to make individual study assignments and thus be better able to meet the particular learning needs of his students. Accordingly, the students' perceptions of the clarity and quality of the tutors' study assignments are a matter of considerable interest.

When asked how clear they found their tutors' study assignments, 62% of the students said they usually found them very clear while 35% found them sometimes clear and sometimes confusing. Only 4% of the students said they usually found the assignments confusing. In reporting how they liked the study assignments, 50% of the students said they found practically all of their assignments interesting while only 7% of the students said that most of the assignments were uninteresting. In short, although there is undoubtedly room for improvement in the quality of the study assignments as seen by the students, the tutorials appear to be working reasonably well in this respect.

Another hoped-for feature of the academic tutorial was that of providing the students with assistance in matters that extended beyond the subject matter of the tutorial itself. Since some of the students were enrolled in academic courses that were more or less different from their tutorials, it is of concern to note the extent to which the tutors were able to help the students with their course work. When asked how frequently their tutors helped them with their regular course work, 32% of the students stated that they did not need any help. Thirty-four percent of the students stated that sometimes they needed help with their courses and were able to obtain it from their tutor. Only 20% of them felt that they needed help but for one reason or another did not ask for it.

The reluctance of this 20% in asking for help raises the question of the degree of rapport that generally was obtained between the tutors and their students. For it is clear that good rapport between tutor and student is an important condition for maximum learning. The students were therefore questioned about their relationships with their tutors during tutorial sessions. Seventy-four percent of the students stated that when and if they asked questions of their tutors, the answers were usually clear and to the point. On the other hand, 21% of the students said that occasionally the tutors' answers were not clear to them. Only one student felt that his tutor brushed him off without giving him an answer. As the tutorials progressed through the summer, 47% of the participants felt that it became easier to ask questions of their tutors and 49% felt that they could not detect a change from the beginning of the summer to the end since they found it was always easy to ask questions of their tutors. It is thus apparent that generally good rapport between the tutors and the students existed which should have furnished an atmosphere conducive to learning. This finding is reinforced by the responses the students made to a question having to do with their reactions to their tutor as a person. Eighty-three percent of the students described their tutor as being helpful and friendly to them.

Most of the tutorial sessions were apparently conducted in a relatively free and informal manner. When asked how much chance they had to talk out their own ideas, 68% of the students said that during tht tutorial sessions they talked about their own ideas fairly often. Only 16% stated that the tutor did all of the talking and they hardly ever received a chance to discuss their own ideas. A further indication of the growing freedom in the tutorial sessions can be seen in the increasing number of students who felt able to criticize their tutors' handling of the sessions. At the end of the third week, 9% of the students said that they were unhappy about the way the sessions were being conducted and told their tutor so. By the end of the sixth week 26% of the students had told their tutors on at least one occasion that they were unhappy with the manner in which the tutorial sessions were conducted. By contrast, the number of students who stated that they were happy with the manner in which the sessions were conducted, but failed to tell this to their tutor, decreased from 46% at the end of the third week to 27% at the end of the sixth week. It is thus apparent that as the summer progressed, the amount of free give-and-take between students and tutors also progressed.

In organizing the tutorial groups an effort was made to fit the nature and difficulty of the work to the needs and abilities of the students. The extent to which this goal was achieved is suggested by two sets of responses to the student questionnaire. When asked to rate themselves in comparison with the other students in their tutorials, 39% were not sure how they were doing, 43% felt that all the students in their tutorial were learning at about the same speed as the others, and 11% felt that they learned at a faster rate than their group mates. In comparing their academic tutorial work with scientific studies at their home colleges, 37% of the students felt that it was about the same, 17% thought that it was little bit harder and 11% thought that the work was a little bit easier. It is noteworthy that this outcome for the academic tutorial work is about the same as that found for the regular course work.

The overall effect that the academic tutorial had on the students' motivation toward a career in a health related profession was essentially negligible. Sixty-five percent of them reported that the academic tutorial had not changed their minds about their career plans. Twenty-seven percent of the students said that the tutorial work had increased their motivation and made them more sure that they wished to pursue a career in medicine. These responses indicate that the great majority of the HCSP participants entered the Program with high aspirations already established for a career in a health related profession, apparently have confidence in their academic potential, and do not intend to allow the academic requirements to interfere with their career choice decisions.

It is important to note further that of the students who felt that the academic tutorial had increased their desire for a medical career, 56% had completed their junior year in college. Thus, in respect to the motivational purposes of the Program, it appears to be paying off effectively among those students who are immediately eligible for making application to medical and dental schools. This finding reinforces the findings shown in Section IV above regarding the high application rates of HCSP participants.

The final set of questions in the students' evaluation form called for suggestions concerning ways in which the academic tutorial might be improved. Listed below are suggestions made by 40% or more of the 1970 HCSP students:

1) More charts, diagrams, pictures, and demonstrations could be used in the tutorials to make things clearer.
2) Students returning to HCSP for a second or third time should be allowed to do independent study, research or have a lab-oriented tutorial instead of the seminar type offered.
3) Students should get more of a chance to bring up problems that they cannot solve.
4) The amount of time spent in the academic tutorial should be shortened.
5) Students should be encouraged to work together on problems.

6) Students should be allowed to select their own academic tutorial.
7) Students should have more say in planning the work of the tutorial.

Tutors' Evaluation of Academic Tutorial

The manner in which the academic tutorial was planned and conducted was left entirely to each individual tutor. The tutors were asked by the administration of HCSP to consider the underlying rationale of the academic tutorial in their tutorial plans. . This rationale, among other things, called for a high degree of tutor-student interaction as a major factor in the conduct of the tutorial sessions.

One index of the extent to which this goal was achieved is to be found in the percent of time the tutors gave to lecturing in their tutorial sessions. The assumption here is that the less the lecturing the greater would be the amount of tutor-student interaction. Table 20 shows the percent of time devoted to lecturing as estimated by the tutors themselves during the first half of the Program and during the second half.

Table 20

ACADEMIC TUTOR TIME SPENT LECTURING

Percent of time lecturing	Percent of tutors reporting First Half of Program	Second Half of Program
0% - 10%	0	13
11% - 30%	33	25
31% - 70%	42	38
71% - 90%	31	25
91% - 100%	4	0
Median percent of time spent teaching	47%	43%

Inspection of Table 20 suggests that the typical tutor spent slightly less than half of any tutorial session lecturing to his students. It also suggests that during the course of the summer there was a small shift toward less lecturing and greater give-and-take with the students.

When the tutors were asked if they recognized any change in the manner in which they conducted tht tutorial sessions as the summer progressed, 54% of the tutors stated that they found themselves lecturing less during the tutorial sessions. At the end of the first half of the summer, 17% of the tutors felt that that they were lecturing more as the summer progressed while only 4% felt this way at the end of the last half of the summer. Thus, it seems reasonably clear from these date that, with some exceptions, the goal of achieving interaction with the students was being well met.

Further assessment of the academic tutorial by the tutors showed the extent to which they felt the students within their groups were responsive to questions raised during the tutorial sessions. Forty percent of the tutors felt that their students were fairly responsive; 52% of the tutors stated that most of the students within their groups were ready and eager to answer their questions. Only 8% of the academic tutors felt that they had to drag answers out of their students. It should be mentioned that 52% of the tutors felt that, as the summer wore on, their students became more responsive to their questions. This coincides with similar responses made by the students in that a great many of them felt it was easier to ask questions of their tutors as the summer progressed.

In reporting on the extent to which the tutorial sessions were characterized by spontaneous and serious interchanges among the students in respect to the subject matter of the tutorial, 47% of tutors, at the end of the third week, felt that there were occasional interchanges initiated by the students themselves. At the end of the sixth week 60% of the tutors had this feeling. There was a decrease from 37% to 25% between the third and sixth week in the proportion of tutors who felt that even though they initiated the interchanges, the students carried them on to some length. Again, 58% of the tutors felt that there were more student interchanges initiated by the students themselves as the Program progressed through the summer. Forty-two percent said that they could not recognize any change in this respect.

The responses of the academic tutors generally agreed with those made by the students in regard to how much extra-tutorial assistance had been given to their students. Eighty-one percent of the tutors stated that they found it unnecessary to teach their students how to use the library; 20% found it necessary to do so. Similarly, 79% of the tutors found it unnecessary to teach students how to take notes in their courses. Another 17%, however, found their students in need of this kind of help and provided it.

With regard to organization and planning of tutorial, 27% of the tutors said that they involved their students to a considerable extent in planning the structure of the tutorial sessions. Forty-four percent said they involved the students to some extent and 29% did not involve their students at all in the structural planning of the tutorial sessions. Although the tutors had worked out a course of study prior to the start of the Program, many of them revamped these outlines after they had met with their students and gained insight into the types of material that would best fit the learning needs of the groups. Thus, 19% of the tutors reported that they involved their students considerably in planning the content of the tutorial sessions and another 63% involved the students to some degree in this type of instructional planning.

In characterizing the general atmosphere of the tutorial sessions at the end of the third week, all of the tutors felt that they were easy, friendly, and serious. At the end of the sixth week the proportion of tutors feeling this way had decreased slightly to 92%. These responses agree with those made by the students in describing the rapport between themselves and the tutors. Because of the good relationships, many of the tutors felt at ease in advising their students on their educational and career plans. During the first half of the Program, 54% of the tutors reported giving this kind of advice; during the second half the percentage rose to 79%.

All in all, one gets the strong impression from students and tutors alike that the academic tutorials were, for the most part, conducted in an informal, friendly atmosphere, that was nevertheless serious and educationally productive.

SECTION VIII

STUDENTS' PERCEPTIONS OF CLINICAL TUTORIAL

The clinical tutorial was designed to provide motivational experiences for the students by giving them a chance to observe and participate in a variety of hospital activities. The main thrust of this effort consisted of giving the students first-hand knowledge of a wide variety of health-related activities.

Evidence on the extent to which the Program was able to give the students a broad range of experiences is presented in Tables 21A,B, and C. The data for these tables were obtained from the "Student Report on Clinical Tutorial," a questionnaire that was administered at the end of the third week of the Program and again at the end of the sixth week. One part of the questionnaire listed 48 different kinds of activities in which the students might be expected to engage in their clinical tutorial sessions. After each activity the student indicated whether he had engaged in the activity not at all, very little, a fair amount, or much. In constructing Tables 21A,B, and C, the column captioned "percent of students reporting more than minimal experience" shows the percent of students who reported that they had engaged in a given activity either a "fair amount" or "much."*

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*Since the questionnaires provided two sets of readings for each activity -- one at the end of the third week of the Program and one at the end of the sixth week, the higher percent in each instance is here reported as probably the more representative.

Table 21A

CLINICAL ACTIVITIES MOST FREQUENTLY EXPERIENCED BY HCSP PARTICIPANTS

Activity	Percent of students reporting more than minimal experience
Listening to an explanation of the general functions and organizations of the hospital	67
Listening to talk about the general problems of medical care	83
Listening to talk about the special problems of medical care for minority/poverty groups	64
Observing the normal delivery of a baby	40
Observing X-ray procedures	47
Hearing and/or participating in a discussion of medical care in the ghetto	42
Reading X-ray plates	40
Visiting a ghetto health clinic	47
Observing minor surgery	40
Observing the diagnosis of a patient	47
Hearing and/or participating in a discussion of diagnostic techniques	43
Following an intern on his rounds	43
Hearing and/or participating in a discussion of the work of an intern	41
Talking with a medical student about what is involved in the study of medicine	47

Table 21A (continued)

Activity	Percent of students reporting more than minimal experience
Hearing and/or participating in a discussion of the undergraduate requirements for medical or dental school	45
Hearing and/or participating in a discussion of admission to medical or dental school	51

Table 21B

CLINICAL ACTIVITIES EXPERIENCED WITH MEDIUM FREQUENCY BY HCSP PARTICIPANTS

Activity	Percent reporting more than minimal experience
Observing cases in an emergency room	32
Hearing and/or participating in a discussion of prenatal care	20
Observing major surgery	35
Hearing and/or participating in a discussion of surgical problems	34
Hearing and/or participating in a discussion of legal problems connected with medical care	28
Observing patients in a nursing home	22
Hearing and/or participating in a discussion of the function and problems of nursing homes	20
Observing an autopsy	33
Hearing and/or participating in a discussion about autopsies	38
Hearing and/or participating in a discussion of the work of a private physician or dentist	20
Hearing and/or participating in a discussion of preventive medicine	29

Table 21B (continued)

Activity	Percent reporting more than minimal experience
Following a resident physician on his rounds	33
Hearing and/or participating in a discussion of the work of a resident physician	37
Hearing and/or participating in a discussion of how a student can finance a medical or dental education	28

Table 21C

CLINICAL ACTIVITIES LEAST FREQUENTLY EXPERIENCED BY HCSP PARTICIPANTS

Activity	Percent reporting more than minimal experience
Observing the abnormal delivery of a baby	8
Hearing and/or participating in a discussion of prenatal care	18
Hearing and/or participating in a discussion of birth control	19
Being X-rayed	3
Observing intake interviews with psychiatric patients	15
Observing treatment of psychiatric patients	10
Hearing and/or participating in a discussion of the problems of mental illness	19
Observing drug addicts	13
Observing treatment of drug addicts	9
Hearing and/or participating in a discussion of the problem of drug addiction	18
*Observing treatment of patients in a dental clinic	7
*Being treated in a dental clinic	6
*Hearing and/or participating in a discussion of the problems of a dental clinic	7

Table 21C (continued)

Activity	Percent reporting more than minimal experience
Studying slides developed in an autopsy	7
Visiting a private physician or dentist in his office	9
*Talking with a dental student about what is involved in the study of dentistry	6

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*The low percentages are explained by the fact that only eight students were enrolled in a clinical tutorial related to dentistry.

Table 21A shows the activities for which 40% or more of the students reported "more than minimal experience;" Table 21B shows the activities for which 20-39 percent reported more than minimal experience; and Table 21C shows the activities for which less than 20% so reported.

It is clear from the three sets of data that the activities to which the students were exposed in their clinical tutorials were both numerous and varied. The most frequent included such divergent experiences as watching the delivery of a baby, reading X-ray plates, visiting a health clinic in the ghetto, observing minor surgery, following an intern on his rounds, listening to a talk on the special problems of medical care for minority groups, and discussing the requirements for admission to a medical or dental school. It is noteworthy that, according to the students' reports, the experiences they obtained in the clinical tutorials were largely of a kind that brought them into direct contact with the actual work of the health professions and invited active discussion of the problems of caring for patients.

Only one of the seven clinical tutorials was related to dental medicine and this proved to be very productive and well received. All students in this tutorial were active participants in administering dental care to each other and in helping dentist in their work.

There appear to be only two important gaps in the experiences provided by the clinical tutorials. Very few students reported any contact with the psychiatric side of medicine,* or with the work of private physicians. Despite these gaps, however, it seems abundantly clear that the clinical tutorials did in fact achieve their purpose of bringing the students in touch with a broad range of activities in the health field.

Those responsible for handling the clinical tutorials in each of the seven participating hospitals were free to organize the tutorial sessions in a mannor best suited to their situation. Some preferred an approach that kept the entire group of students together throughout the typical tutorial session. Others opted for a pattern that divided the students into several small groups. Still others combined the two approaches. Table 22 summarizes the various types of approach as perceived by the student participants. It can be seen from the table that most of the hospitals favored the practice of dividing the students into several groups for at least a part of the clinical tutorial sessions.

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*The 1969 Coordinator's report (1) indicated that the Clinical Tutorial in Psychiatry for HCSP 1969 was poorly received by the students; no specific psychiatry tutorial was offered in 1970.

Table 22

TYPICAL ORGANIZATIONS OF CLINICAL TUTORIALS AND PERCENT OF STUDENTS IN EACH

Type of Organization	Percent of students involved
One large group	17%
2-3 groups for whole session	25%
2-3 groups for part of session	38%
4 or more groups for whole session	8%
4 or more groups for part of session	9%

Table 23

PERCEIVED EMPHASIS ON LECTURING IN CLINICAL TUTORIALS

Percent of time given to lecturing	Percent of students reporting	Percent of tutors reporting
Under 25%	45%	65%
26%-50%	38%	28%
51%-75%	17%	7%

Table 24

STUDENTS' PERCEPTIONS OF AMOUNT OF INFORMATIONAL DISCUSSION IN CLINICAL TUTORIALS

Percent of time given to informal discussion	Percent of students reporting
Under 25%	22%
26-50%	50%
51-75%	0
76%-100%	22%

The manner in which the sessions were conducted also varied to a considerable extent. In some tutorials the students reported a heavy emphasis on lecturing by the doctors in charge; in others the emphasis was on informal discussion. In respect to the emphasis on lecturing, Table 23 shows a comparison between the perceptions of the students and the perceptions of the tutors. It can be seen that there is rough agreement on this matter between the two. The students also reported on the extent to which the clinical tutorials provided opportunities for informal discussion. Table 24 gives the information on this aspect. Taken together, these data suggest that although many of the clinical tutorials may have put a considerable emphasis on lecturing by the doctors, there was nevertheless much time given to informal discussions between the students and the hospital personnel. Only 28% of the students said that they wished more time had been devoted to such discussions, and all but 9% said that they found the clinical tutorials either fairly or extremely interesting. The clinical tutors had a similar reaction: 81% of them said they felt that the tutorial sessions were stimulating.

The effect of the clinical tutorials on increasing the knowledge of the health professions and increasing their interest in pursuing careers in those professions is shown in Tables 25 and 26. From these two tables it can be seen 1) that a substantial majority of the students acquired through the clinical tutorials at least some increase in knowledge about the way the health professions operate and 2) that they were further stimulated by the tutorials to pursue a career in the health field. The fact that 2% experienced a loss of interest in such a career is of some importance. It suggests first, that these students would be steered out of the field early and thereby spared the futility of pursuing further a field that might well turn out to be uncongenial. It also suggests that the selection of the students for the Program was unusually successful in identifying students either already well-motivated toward careers in health or capable of being so motivated.

Taken all together, the data on the clinical tutorials strongly suggest that the Program was successful in achieving its purpose of exposing the students to a wide variety of activities in the health fields and thereby increasing or at least reinforcing their motivation to pursue careers in those fields.

Table 25

AMOUNT OF INCREASE OF KNOWLEDGE OF HEALTH CARE REPORTED BY STUDENTS IN CLINICAL TUTORIALS

Amount of increase	Percent of students reporting
Large increase	50%
Fair increase	31%
Little or no increase	19%

Table 26

EFFECT OF CLINICAL TUTORIALS ON INTEREST IN PURSUING CAREERS IN HEALTH FIELDS

Direction of effect	Percent of students reporting
Increased	71%
Decreased	2%
No effect	27%

SECTION IX

RECOMMENDATIONS FOR IMPROVEMENT IN HCSP AS SEEN BY STUDENTS AND OBSERVERS

HCSP Students' Recommendations

The following are suggestions made by at least 40% of the students for ways to improve HCSP. These suggestions were collected from questionnaires in Appendix X.

1) More social activity should be planned for the students.
2) Students hould play a greater role in planning the social activities.
3) Students should have fee-waived access to the athletic facilities such as the swimming pool, basketball courts and tennis courts. (This was implemented during the 1970 HCSP)
4) More interviewers from American medical schools should be encouraged to visit HCSP.
5) The Coordinator-Head Tutor of the Program should have more power to the extent that he is actually the head administrator during the summer.
6) Convenient arrangements should be made so that more students can hear speakers who visit HCSP. (With the heavy academic and clinical schedule, it was often impossible for students to attend all of the outside activities)

Interviewers' Evaluation and Recommendations Based on Taped Interviews* (Appendix XI)

As mentioned earlier on page 76 an interviewer discussed the Program with 11 students chosen randomly and taped their reactions to the Program.

There were 15 questions in the final version of the interview, ranging from "Has the Program accomplished what you expect of it?" to "If you had the responsibility for running the Program yourself, what would you do differently?"

While the early versions of the interview (first two or three students) did not have the questions phrased in exactly the same way or in the same order as the final version, the tabulation in the Appendix of all the interviews contains responses that are directly equivalent to one another.

The interviews took from 45 minutes in the beginning to 20 minutes toward the end. Although it took less and less time to complete each interview, the final interviews appeared from the tape to be just as informative as the initial ones. Eight of the respondents are seniors in college in the 1970-71 academic year, one will be a junior, one will be a sophomore and one will have entered medical school this past year. Eight students were in HCSP for the first time and three were returnees from the 1969 Program. Two were from Texas, two from California and one each from Massachusetts, Georgia, Mississippi, New York, Arkansas, and Oklahoma. The final respondent identifies his geographic origin as "the Mid-West."

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*These interviews were performed by Mr. James Giglio, a graduate student at the Harvard Graduate School of Education and an Academic Tutor for HCSP, 1970.

The following summarizes the responses to the questions of the taped interviews:

Question 1: HAS THE PROGRAM ACCOMPLISHED WHAT YOU EXPECTED OF IT?

There were four unequivocal "yes" answers to this question, two "not sure yet", four "yes and no" and one fairly definite "not really." The reasons for this spread of responses will be discussed in the next question.

Question 2: WHAT WERE SOME OF THE THINGS YOU EXPECTED THE PROGRAM TO ACCOMPLISH?

The most frequent answer to this question was "help in getting into a medical school"; six students gave essentially this response. Those who indicated "not sure yet" to Question 1 were unable to judge at the time of the interview how much tangible help HCSP had been, since they had no firm commitment from any medical school as to admission. Five students answered that they wanted a taste of clinical experience, to see what hospital/medical/doctors' life is like. Three wanted advanced academic work, either because it was not available at their home schools or they wanted to get a certain course out of the way before the new academic year. Four responded that they wanted to mix in with Harvard students as a sort of self-test of their ability to compete in a high pressure atmosphere.

There were two major causes of disappointment. First was the failure to get the expected help in getting into medical school. The only unequivocal "no" to Question 1 was for this reason. The second cause of disappointment had to do with perceived deficiencies in the instruction available in the academic course or tutorial.

Question 3: HAVE YOUR CONTACTS WITH HARVARD MEDICAL SCHOOL PERSONNEL (STUDENTS, FACULTY, ADMINISTRATION) BEEN BENEFICIAL TO YOU?

There were four definite "yes" responses to this question, six "no's", and one person who had been admitted to another school and didn't care whether or not he saw anybody from HMS. The "no" responses were all due to the students' not having seen much of anybody from HMS. Several people expressed rather strong feelings about the perceived indifference of HMS to HCSP. Those who answered"yes"either were strongly impressed by their clinical tutor, or had had some kind of extensive "rap session" with some HMS students. A fairly obvious way to improve the image of HMS among HCSP students would be to have these rap sessions more frequently and at times when more HCSP people can participate. The clinical tutors could help, too; two of the students told of taking time out to go back and talk with their clinical tutors, since the tutorial sections were too large to allow much personal contact. Breaking the tutorial sessions up into sub-sections might help with this problem.

Question 4: ARE YOU SATISFIED WITH THE DORMITORY AND DINING FACILITIES? FOR NEXT YEAR, DO YOU THINK IT WOULD BE A GOOD IDEA TO PUT ALL THE HCSP PEOPLE IN THE SAME DORM?

Seven people said the food and dorms were O.K.; there was no real enthusiasm about it, and a common qualifier was that Harvard is about like any other college in the quality of its room and board. One student complained that in her dorm, male visitors kept popping in during off-hours, and that the black girls in the dorm were reprimanded more severely than the white ones when this happened. She also complained that the dorm supervisor was somewhat unpleasant when some of the HCSP girls made some mild criticisms of the quality of the housekeeping.

The food complaints probably relate more to regional differences in diet than anything else. Southerners, for instance, are used to getting two vegetables with lunch and dinner, along with a salad. One doubts that these differences can be reconciled with traditional New England ways of cooking and serving food (grits are just too subtle for the Northern palate, which usually confuses them with cream of wheat and insists that sugar is their proper seasoning), but it might liven things up to have an occasional food-centered social event; a soul food lunch, or a real Southern fried chicken supper, or maybe a midnight snack featuring some of the great variety of ethnic sandwiches available in the Boston area, or a Mexican dinner prepared by the chicano students.

As might have been expected, there was a division of opinion on the idea of putting all the HCSP participants in the same dorm. Seven students replied in the affirmative, stating that it would promote mutual help, group spirit, and social life. Four were opposed, saying that one of the purposes of coming to Harvard is to broaden horizons, and this is promoted by mixing in with the general run of Harvard students. Both these views are right, of course, a reasonable compromise might be to make one dorm available to any HCSP student who wanted to stay with the group, and let those who want to get out in the larger student body go to other dorms.

Question 5: WHAT ABOUT THE "CAMBRIDGE ATMOSPHERE" AND SOCIAL LIFE OF THE COMMUNITY (OTHER THAN HCSP EVENTS) DID YOU FIND IT HARD TO ADJUST? IS THERE ANYTHING THE PROGRAM MIGHT HAVE DONE TO MAKE THE ADJUSTMENT EASIER?

Five people said they enjoyed the "do your own thing" way of life around Harvard Square and found it stimulating. The political extremists populating the square, and the common rock festivals, seemed to be what caught people's fancy most. Two said that they had friends or relatives in Roxbury or the South End, and went there for their social life. Two indicated that they were too busy for much socializing, and the last two either found Cambridge dull or repulsive (the first respondent really didn't like to be panhandled by runaways).

There was only one suggestion as to something the Program might have done about getting into the swing of community life, and that was that there be some information available about black churches within a reasonable distance of Cambridge. Everyone else seemed to be satisfied to be left on their own to find their way around the community.

Question 6: IS THE ADMINISTRATIVE ORGANIZATION OF THE PROGRAM ADEQUATE? CAN YOU GIVE SOME SPECIFIC SUGGESTIONS AS TO HOW THE PROGRAM MIGHT HAVE BEEN BETTER ORGANIZED?

The most frequent response to this question was that the Coordinator-Head Tutor appears to have too little decision-making power to solve problems as they arise without having to go to the HMS authorities for approval. Four people made this observation.

Three respondents said that the mix-up in the stipend could have been avoided by more careful planning of the application form, so that there would be no confusion about the amount of money a student would get from HCSP, and no misconception that the amount requested might affect admission to the Program.

These respondents were concerned with the timing of visiting speakers and medical school representatives' visits. They felt that too many of these seemed to come when most or all HCSP could not be there.

Two people complained about their assignment to academic tutorials before the Program started; they thought there should have been more choice among the tutorials.

The strongest feelings expressed in answering this question had to do with the authority of the Coordinator-Head Tutor. One student used the term "buck-passing" to describe what happened when problems came up. These students very much want to know that there is one man in charge, and that he does not have to go to any higher-level authority to get the power to solve a particular problem at the time it comes up.

Question 7: WHEN YOU HAVE HAD PROBLEMS, HAVE YOU BEEN ABLE TO GET THE RIGHT KIND AND AMOUNT OF ASSISTANCE AND/OR INFORMATION?

The answer to this question was unanimously "yes"; the sources of information and help varied from other students to academic tutors to the Coordinator-Head Tutor, but the information and assistance seems to be getting from where it's at to where it's headed.

Question 8: AT THE TIME YOU HAD TO DECIDE WHICH ACADEMIC COURSE TO TAKE, WERE YOU SATISFIED WITH THE SELECTION OF COURSES AVAILABLE TO YOU?

There were four unqualified "yes" responses to this question, four who responded that the inclusion of Cell Biology,(Natural Sciences S-123) was the thing that saved the day, two who simply felt that there was not enough variety, and one who was satisfied, but only because he felt that what Harvard offered in the summer is no better or worse than the usual summer offerings of most universities.

Obviously, the presence of Cell Biology in the curriculum made a big difference in this tabulation. Perhaps there should be something like it in each of the major scientific areas, but this is not something that HCSP can undertake to achieve unilaterally.

Question 9: ARE YOU SATISFIED WITH THE STRUCTURE OF AND RELATIONSHIPS AMONG THE THREE PARTS OF THE PROGRAM?

There were four unqualified "yes" responses to this item, also. The rest of the responses were a melange of complaints and suggestions with no clear pattern to any of them. One suggestion that might be worth looking into is the possibility of providing a research experience for 2nd-year participants, in the place of the clinical tutorial.

Question 10: HAVE YOU HAD ANY CONTACT WITH THE STUDENT ADVISORS OR PROGRAM COUNSELOR? HAVE THEY BEEN USEFUL TO YOU?

Six of the respondents had had essentially no contact with any of these people. One had seen the counselor informally around campus, and two had had problems that she helped with. The student advisors were mentioned by two respondents as having been useful sources on information about medical school admissions policies.

Question 11: WHAT ARE YOUR FUTURE PLANS? DID THE PROGRAM CHANGE THEM?

All the respondents plan on attending medical school, and only one had had his plans changed as a result of HCSP. Five had plans for specialties and five mentioned plans for going into some form of "community" practice. By and large, HCSP is attracting people who already know what they want to do and who they intend to benefit from their training.

Giving the title of the Program, it might seem strange that all the respondents are aiming at one health career.

The need for dentists is just as great as the need for M.D.'s, and some of the HCSP people might not make into medical school; it might be wise to offer some counseling and guidance into other useful kinds of health-related occupations.

Question 12: HAVE YOU HAD ANY DIFFICULTY ADJUSTING TO THE EDUCATIONAL ATMOSPHERE OF HARVARD? IS THERE ANYTHING THE PROGRAM MIGHT HAVE DONE TO MAKE THIS ADJUSTMENT EASIER?

With only two exceptions, the answer to this question was "no" or "not much"; the two exceptions had had a rough time with the high-pressure ways of Harvard, but felt that they would survive despite the pressures. As far as helping with the adjustment, no one felt that the Program could have done any more than it was doing. The greatest expression was that academic adjustment seems to be more a matter of intestinal fortitude than good courseling.

Question 13: HOW MANY MEDICAL SCHOOL REPRESENTATIVES HAVE YOU TALKED TO SO FAR?

HAVE THESE INTERVIEWS BEEN USEFUL TO YOU?

CONSIDERING THE REPRESENTATIVES YOU HAVE TALKED TO, DO YOU THINK THESE MEDICAL SCHOOLS ARE REALLY INTERESTED IN DOING SOMETHING ABOUT MINORITY MEDICAL CARE (AND THEIR OWN LAPSES IN THIS AREA) OR ARE THEY SIMPLY TRYING TO PUT ON A SHOW OF CONCERN IN ORDER TO BE FASHIONABLE?

This question developed in this form during the first two interviews. A hint was caught in the first interview that the respondents might have something important to say to us about the ways the beneficiaries of such programs as HCSP feel about the sincerity of medical education and its efforts to do something about providing more medical talent to the nation's medically deprived communities.

Six respondents had seen from five to seven representatives, four had seen one, two or three, and one respondent had talked to people from ten medical schools. All had mixed feelings about the sincerity of the institutions being represented; the most usual response to the third part of this question was that about half the institutions seemed genuinely interested in doing something real.

The difficulty with making judgements such as that called for in the last part of the question is that the student's impression of the school is necessarily filtered through his perception of the representative as a person, and some combinations of student and representatives simply don't hit it off very well. There were a number of things about the medical school representatives and their styles that turned people off in various ways:

1) The representatives who talk about how their institutions look for the very best people; they seem to be discouraging anyone from even thinking that he might be qualified.

2) A greet stress on how hard it is to survive at the school in question is almost as bad.

3) Failure to take while interviewing. (I found out later that at least one man used a tape recorder; it might have helped if this had been made known to the students being interviewed.)

4) Failure to be "with it"; there really is no excuse for something coming into HCSP to talk to its students, without knowing the meaning of "Chicano."

5) Admission that the school really had no special programs for minorities, and essentially no minority group representation on campus. This would seem to be more a matter of institutional policy than personal style, and less subject to the filtering effect described above.

6) Attempting to sell the institution instead of interviewing the student.

It probably would not be a good idea to try to keep certain institutions from sending representatives, no matter how phony they might be. After all, one of the skills these students are developing is in the detection of phonies. One respondent stated that students should realize that not everyone who seems to be a phony is one; that it might just be personality conflict. It would also seem reasonable to alert the representatives to some of the more obvious surface features of their approaches that "rub HCSP students the wrong way."

One response deserves special mention. The student felt that there was no sincerity at all in such efforts as HCSP; that if onyone had been really interested, something would have been done a long time ago, and the only reason for the current show of interest is the unstable political situation that has some people frightened.

Question 14: HOW ABOUT THE SOCIAL ACTIVITIES PROVIDED BY THE PROGRAM? DID YOU ATTEND THE CRANE BEACH AFFAIR?

WOULD YOU LIKE TO SEE MORE EVENTS OR SOME DIFFERENT KINDS OF EVENTS?

All the respondents thought the social side of HCSP was O.K., with qualifications and suggestions for improvement. Seven had been to the big party at Castle Hill, and there was one suggestion that there be two such events in the Program.

Everyone else seemed to to think that a greater number of smaller events, and a greater variety of events, should be added to the Program. Among the suggestions were informal record hops, group singing, movies, chess tournaments, small concerts with local groups, and speakers from the general community, on topics not directly concerned with things that are medical.

Question 15: IF YOU HAD THE RESPONSIBILITY FOR RUNNING THIS PROGRAM YOURSELF, WHAT WOULD YOU DO DIFFERENTLY?

There were only a couple of theings which were suggested here that are repeated. One of these is that there be some choice among academic tutorials, to replace the advance assignment system presently being used. The other is that the Program addresses itself to the problems of delivery of health care to minorities; its social and economic aspects, either through speakers from community health care programs or visits to such programs as part of the clinical tutorial.

Student Advisors' Recommendations

Two black students from HMS served as student advisors. Their reports are included as Appendix XII. Both student advisors observed only two courses: Biology S-195 (General Biochemistry) and Mathematics S-1a. The other courses were observed by only one advisor. In general the advisors felt that more courses similar to Natural Sciences S-123 (Cell Biology) should be given, where there is material presented which has relationship to future medical and dental interests. The advisors felt that more members of the Faculty of Medicine should be involved in teaching these courses. Courses such as Bacterial Genetics and Medical Statistics were suggested as two such courses. Both advisors felt that HCSP students should not be encouraged to take courses which attempted to cover a full year's work in a summer, but that if these courses were taken by HCSP students they should be reinforced by academic tutorials which related closely to the course work. These courses would be those such as Chemistry S-1 (Introductory General Chemistry) and Chemistry S-20 (Organic Chemistry).

Both student advisors believed that academic tutorials covering contemporary and new topics in Biology should be continued. They believed that returning HCSP students should have the option of selecting tutorials which introduced students to basic techniques in laboratory investigation. They also believed that the Program should include more medical students as tutors to convey the practical application and/or relevancy of the academic tutorial to medicine. However, it has been difficult to find medical students with the requisite prior teaching. For the student with potential academic problems, tutorials reinforcing the academic course work should be offered. Both advisors believed that the clinical tutorials should involve the students more directly with hospital procedures. The experiences in community health care seemed to appeal to all the students and it was recommended by both student advisors that visits to community health centers should be instituted in all clinical tutorials. One advisor recommended that students returning to HCSP for a second or third summer should have the option of an "in-depth experience" in clinical medicine to replace the academic tutorial.

Counselor's Recommendations

The following is the summary of the recommendations submitted by the counselor, whose report is outlined in detail in Appendix XIII:

1) A tour of the Boston-Cambridge area should be made at the beginning of the Program to give the students a "feel" of the area.
2) Minority students attending Harvard Medical School who are available during the summer should serve on a voluntary basis as "big brothers" and "big sisters" to HCSP participants.
3) All top-level administrative positions in HCSP should be held by minority-group members.

4) There should be frequent social activities, generally less elaborate than the Crane Beach-Castle Hill affair (this was the summer beach outing).

SECTION X

ASPECTS OF HCSP TO BE CONSIDERED IN SETTING UP SIMILAR PROGRAMS ELSEWHERE

Summer programs at established summer schools throughout the country, such as Harvard, with strong basic science programs, can offer the student an opportunity away from his original school or home environment and whatever pressures might be generated there to compete with academic peers whether of majority or minority status. Such summer programs can also provide an in depth experience, intensified by group activities and leading toward the goal of allowing the student to decide whether he is interested in the health professions and whether he is academically and motivationally prepared.

When a minority student finds himself able to compete successfully with other students from more rigorous academic institutions, the reassuring and ego-building aspects of this discovery cannot be underestimated. The positive motivational feedback produced by participation in the Program upon the student's attitude toward medicine and the allied health professions is provided by such experiences as the Clinical Tutorial, and the fact that representatives from many medical schools visit the Program. For example, representatives from 24 medical schools visited HCSP in 1970, and many additional are anticipated in 1971.

Other strong evidence on this point is shown by the fact that 88% of the post-juniors in the Program applied to medical school, as opposed to 32% of the post-juniors who applied but were not enrolled in the Program.

Of the total applicants to the 1970 HCSP who applied to medical school and were accepted, we find that 78% of the enrollees were accepted to medical or dental school and only 43% of the rejectees were accepted to medical or dental school. Although we cannot be sure of the fact that these two groups were strictly equivalent since there was no direct control group, analysis of the admissions data support the fact that these groups were in many respects similar. Thus we have evidence of the academic effect of such a program over and above the motivational effect.

It is the feeling of those who are responsible for HCSP that in the long run, although medical and dental schools are able to provide part of the stimulus and raison d'etre for such programs, their proper setting is with the undergraduate curriculum and responsibility for their direction should lodge there. The problems that HCSP has encountered during its first two summers with multiple and often confusing administrative control support this feeling. For 1971, administrative and financial control of HCSP will reside in the Harvard Summer School.

It is the feeling of the Harvard Medical School, the Harvard School of Dental Medicine and the Harvard Summer School *that a program such as HCSP is a more satisfactory solution to the immediate problem of increasing minority group entrance into the health professions than the alternative approaches presently taken by many institutions - offering students an extra year of preparation following college graduation before entering the normal four-year course*. This latter approach delays the entry of minority groups into health professions by prolonging their education by one year. In addition, the stigma that can be attached to a "special student" status for a year - or what in effect amounts to remedial work in a university setting - can certainly prove ego damaging. Dr. Lloyd Elam, President of Meharry Medical College, has expressed his uneasiness for this "extra year approach."

In addition, the cost per student for a full extra year of education may amount to $6,000; although HCSP has been operative for only two summers, its participants have already received comparable benefits at considerably less cost. In addition a five-year program operated by a medical school commits both the student and the medical or dental school to an arrangement that compels the student to enter that particular medical or dental school upon satisfactory completion of the extra year. It is possible that some schools may be able to use the promise of a fifth year of study in lieu of active recruitment for the best students available in the open market. Indeed, the student would in fact be deprived of his freedom of choice in applying to a medical school other than the one which accepted him for the extra year. Moreover, if the student does not perform satisfactorily as judged by the medical school, the extra year has been wasted and there is probably no "second chance."

THE RECOMMENDATIONS FOR ADAPTING HCSP ELSEWHERE ARE AS FOLLOWS:

1) SUMMER PROGRAMS SIMILAR TO HCSP CAN BE INSTITUTED PROVIDED THE FOLLOWING CONDITIONS ARE MET.
    a) THE UNIVERSITY OR COLLEGE HAVE IN EXISTENCE AN OPEN ENROLLMENT SUMMER SCHOOL WITH STRONG SCIENCE COURSES.
    b) THE MEDICAL AND DENTAL SCHOOLS AND AFFILIATED HOSPITALS AND CLINICS ARE CONTIGUOUS TO THE UNIVERSITY.
    c) THE STUDENTS ENROLLED IN SUCH SUMMER PROGRAMS ARE PART OF THE GENERAL ENVIRONMENT OF THE SUMMER SCHOOL.
2) A FORMAT SUCH AS THAT DEVELOPED BY HCSP, COMPOSED OF ACADEMIC COURSE WORK, ACADEMIC TUTORIAL AND CLINICAL TUTORIAL, SHOULD BE
    a) INSTITUTED
    b) PLACE PARAMOUNT EMPHASIS ON ACADEMIC PREPAREDNESS
    c) AVOID THE TEMPTATION OF MAKING THE CLINICAL TUTORIAL THE MAJOR PART OF THE EXPERIENCE.
3) RESPONSIBILITY FOR RUNNING THESE PROGRAMS SHOULD BE VESTED AT THE UNDERGRADUATE LEVEL WITH STIMULUS

AND FUND RAISING CAPABILITIES PROVIDED BY THE MEDICAL AND DENTAL SCHOOLS.

4) REPRESENTATIVES OF MINORITY GROUPS SHOULD BE INVOLVED IN ALL PHASES OF PLANNING AND PROGRAM DEVELOPMENT: THIS SHOULD INCLUDE BOTH MINORITY GROUP FACULTY MEMBERS AND MINORITY GROUP STUDENTS.

5) FINANCING OF THESE PROGRAMS MUST BE MORE THAN ON A YEAR-TO-YEAR BASIS: AT THE PRESENT TIME THE FEDERAL AND STATE EDUCATIONAL DOLLAR APPEARS TO OFFER THE MOST STABLE FUNDING MECHANISM.

6) PROGRAMS SUCH AS HCSP COULD BE OFFERED ON A REGIONAL BASIS AND THUS DECREASE THE OPERATIONAL COST IN SEVERAL WAYS:
   a) TRANSPORTATION;
   b) TUITION WHICH DIFFERS FROM SCHOOL TO SCHOOL;
   c) ROOM AND BOARD WHICH ALSO DIFFERS FROM SCHOOL TO SCHOOL.

SECTION XI

BASELINE DATA COLLECTED FOR LONG-RANGE EVALUATION

Three types of data were collected for future reference in evaluating the development of the Program on a long-term basis. The first instrument was a set of standardized tests called the Undergraduate Record Examinations in biology, chemistry and mathematics; the second type was the Independent Activities Questionnaire (IAQ) which provided a measure of the range of interestes of the 1970 HCSP participants; the third was a collection of data on the universities and colleges represented by applicants to the HCSP for the summers of 1969 and 1970.

Undergraduate Record Examinations (7)

The Undergraduate Record Examinations in biology, chemistry and mathematics were administered to the students during the sixth and seventh weeks of the Program. All Undergraduate Record Examinations are designed to:

1) Provide information useful in assessing individual student achievement in undergraduate work and competence for further study;
2) Serve as one useful source of information for student counseling;
3) Provide information that will prove useful in evaluation of the effectiveness of programs in undergraduate colleges and universities.

The tests administered were The Field Tests, which are comprehensive tests designed to measure the student's achievement and ability in his major field. Each test has a time limit of two hours.

The tests are designed to cover the basic principles of the subjects and include many questions requiring application of these principles. The tests, therefore, do not merely measure factual knowledge, but rather evaluate the student's analytical ability in using factual knowledge to solve problems, understand relationships, and interpret the type of material with which the senior major must deal. Questions calling for information are combined with questions requiring an interpretation of material presented by graphs, tables, charts and financial statements. Students are not expected to be familiar with the entire subject matter of any test.

Over 85% of the students took all of the tests. The significant participation of the students in the examinations denotes a compromise between the office of the Program and the HCSP students. Some of the students rebelled against taking the examinations, stating that they would not place their names on the answer sheets. The reasons for this were at least two-fold:

1) The students felt that the results of scores on standardized tests have been used for many years as justification for exclusion of minority students from educational opportunities;

2) The students also felt that release of the results on these standardized tests might also be used to impune the academic reputation of their undergraduate colleges and of their own preparedness in the health sciences.

When it was explained to the students that one of the purposes for giving the examination was for counseling them, individually, and that this obviously necessitated that each of them be identified, they agreed to take the tests. In addition, for evaluative purposes the students were willing to let the test scores to show gain in academic performance provided individual and aggregate measures of status were not recorded.

Each student was sent the results of his or her scores on each examination in a communication in the fall of 1970. It is hoped that this set of standardized tests can be administered to HCSP students on a continuing basis in order to assess the amount of gain in science achievement by HCSP students who return for more than one summer. It must be noted, however, that one cannot infer from gains in science achievement tests by the students the relative roles of HCSP and their parent institution. However, it is hoped that one might ascribe to the influence of such summer programs as HCSP any gains from year to year over and above the normal increments expected as students move through college.

Independent Activities Questionnaire (IAQ) (4)

The Independent Activities Questionnaire was administered to 1970 HCSP students during the sixth week of the Program.

Background. The IAQ was developed some years ago at the Educational Testing Service (ETS) to get a measure of the degree to which a high school student may be motivated to pursue various types of activities on his own. The instrument contains questions about the student's activities in a number of different fields in which high school students more or less frequently engage strictly on their own outside of school hours. In its early applications, the instrument yielded only three scores: 1) a gross score based simply on the number of independent activities in which the student engaged regardless of kind, and 2) a gross score based on the quality of the student's involvement in such activities regardless of kind, and 3) a gross score based on the degree of public recognition of such activities, again regardless of kind.

The rationale behind the instrument was that these three over-all scores, taken together, should provide an indication of the student's urge to do things on his own and to be generally creative. As such, we assume that they constitute an operational definition of "strength of interest."

In applying the IAQ to the HCSP students, it was felt that it would be possible and desirable to go beyond these global "strength of interest" scores by scoring the student's responses on each of seven groups of questions covering the following fields: political, business, literary, mechanical, scientific, music and art. It was felt that this more refined scoring procedure would provide more useful information concerning the students in the HCSP by showing how their strength of interest in any one field compared with any other field.

Accordingly, the items of the IAQ were classified according to field. Weights were then assigned to each of the items within any field. Thus, an item that reflected more intense and productive activity was given a weight of 2 or 3. The weighted raw score was then computed for each HCSP student in each field, the ratio of his weighted raw score to the total possible weighted raw score in the field was calculated, and then, by entering a table of the normal curve, this ratio was converted to a standard score. It should be noted that this standard score is _not_ a normative score, but one that reflects _absolute_ level of performance in any given field on a scale which runs from 0 to 60 and which is comparable across fields.

Interpretation of the Converted Scores. Table 27 shows the distributions of the seven sets of scores. It is evident that all the score distributions are positively skewed -- least so in the scientific area and most so in the mechanical area.

Table 27

SCORE DISTRIBUTIONS OF 1970 HCSP STUDENTS WHO RESPONDED TO THE INDEPENDENT ACTIVITIES QUESTIONNAIRE

Intervals	Areas of Interest						
	Political	Business	Literary	Mechanical	Scientific	Music	Art
58 - 60	1						
55 - 57							
52 - 54							
49 - 51							
46 - 48							
43 - 45	1						
40 - 42							
37 - 39	1						
34 - 36	3						
31 - 33	1	2	2	1			
28 - 30		5	1	1		3	
25 - 27	4	6			6	2	
22 - 24	6	10	8	1	7	4	4
19 - 21	10	12	5	2	13	14	3
16 - 18	9	10	32	5	15	17	13
13 - 15	1	4	7	16	10	7	10
10 - 12		2	2	3	10	6	4
7 - 9	1	1				2	
4 - 6							
0 - 3	31	17	12	40	8	14	35
TOTAL	69	69	69	69	69	69	69

This skewness is not surprising, however. Previous studies ot total IAQ scores have shown a similar phenomenon among unselected high school students. This simply means that relatively few such students engage in many genuinely independent activities of any kind, either because they are not motivated to do so or because they lack the opportunity to do so.

The advantage of breaking down the IAQ results into seven separate fields is that it enables one to ascertain whether a student has a driving interest in any field. Table 28 shows the results of this type of analysis. Here it can be seen that a clear majority of the HCSP students do, in fact, have a driving interest in at least one field. Eighty-one percent of them had highest scores of 19 or better. This result suggests that the HCSP students were a generally well-motivated group.

If one uses the same score, 19, as a cut-off point for each field, one gets a picture of where the major interests of the HCSP students appear to lie. Table 29 provides this information. Clearly, the field in which this group of students has been most active has been the field of business (51% scored 19 or better on the IAQ). The next two fields in which they have been most frequently active are the political and scientific fields (39% and 39%, respectively, scored 19 or higher). These results are in line with what one would expect from this group of students. Since they were mostly from low-income families, their need to make money in order to

Table 28

HIGHEST IAQ SCORE OBTAINED BY HCSP STUDENTS IN ANY ONE OR MORE FIELDS

Score Interval	Number of Students
58 - 60	1
55 - 57	
52 - 54	
49 - 51	
46 - 48	
43 - 45	1
40 - 42	
37 - 39	1
34 - 36	3
31 - 33	3
28 - 30	6
25 - 27	12
22 - 24	13
19 - 21	16
16 - 18	9
13 - 15	1
10 - 12	1
7 - 9	
4 - 6	
0 - 3	2
Median	23

Table 29

NUMBER AND PERCENT OF HCSP STUDENTS SCORING 19 OR HIGHER IN EACH FIELD

Field	Number of Students	Percent of Students
Political	27	39
Business	35	51
Literary	16	23
Mechanical	5	7
Scientific	26	38
Music	23	33
Art	7	10

continue their education has been for many of them an absolute necessity. The fact that they are members of a minority group may explain the relatively high interest in political activity; and the fact that they are headed for one of the health professions may explain their interest in scientific affairs.

The Future. It is quite likely that as minority students become more aware of the existence of the HCSP and the successes of some of its alumni, their interest in health-related professions and vocations as reflected in their responses to the IAQ will show noticeable increase. It is safe to state that a representative number of minority students have their interests in health-related fields deflected by the realization that they are confronted by an economic impasse which makes it impossible for them to remain in such a long preparatory status without income. It is very important that publicity concerning the Program be adequate to assure knowledge of its existence to minority students.

We therefore do not propose that the administration of the IAQ be transposed from an instrument to be used with matriculants to one that would influence admissions decisions, but that it be used regularly in the future HCSP to check out the significance of the kind of profile presented above.

Profiles of Colleges and Universities from Which Applications Were Received for 1969 and 1970 HCSP

Appendix XIV provides information on the following characteristics of the colleges and universities from which the HCSP received applications for 1969 and 1970 Programs: Location of college; graduate and undergraduate enrollment; type of institution; size of undergraduate, graduate and science faculty; percent of faculty holding doctoral degrees; percentage of entering freshmen subsequently awarded the baccalaureate degree; percent of students going to graduate school; the availability of undergraduate counseling services and premedical counseling service in particular; distribution of students by major fields; the selectivity of admissions as characterized by the Hawes Scale (see Appendix IV); the number of course offerings in science; the number of HCSP applicants that were accepted, rejected and registered for 1969 and 1970.

A cursory examination of this as yet incomplete survey indicates the following salient characteristics:

1) many of the HCSP students are matriculated at colleges rather than universities;

2) many of these colleges have high drop-out rates as reflected in the percent of entering freshmen subsequently awarded the baccaluareate degree;

3) many of these institutions have a small science faculty in which a large percent of the faculty do not hold doctoral degrees;

4) these institutions have traditionally had a small percentage of their students going into graduate schools in medicine and dentistry or into Ph.D. programs;

5) although undergraduate counseling services are available in most of these institutions, there is a significant number of schools at which premedical counseling services are not available;

6) for schools in which data is available, physical, biological and other natural sciences make up a relatively small percentage of the undergraduate majors;

7) many of these schools have a non-selective admissions policy and on the whole receive a "C" rating in this respect.

It is hoped that as a result of students applying to and participating in programs such as HCSP, a "ripple effect" on science courses, counseling services and other characteristics of many of these potential "feeder" colleges can be observed.

SECTION XII

CONCLUSIONS AND RECOMMENDATIONS

The format of the Health Careers Summer Program for Minority Students has been described and problems encountered in its development, planning and implementation for 1970 have been enumerated.

In Section I, it is indicated that this evaluation would address five major questions. Although the present report has been mainly concerned with the short-term impact of HCSP and the establishment of baseline data selected for long-term evaluation, answers to the five major questions warrant continuance of the Program and its expansion to other university centers.

1) The Health Careers Summer Program increasingly is reaching minority students from segments of the population who are interested in having careers in the health professions, thought to have the ability to prepare themselves for such careers despite the absence of the traditional types of evidence to support such a presumption and, unlikely because of inadequate preparation and lack of stimulation to undertake such preparation in the absence of special stimulus and training such as provided by the HCSP. There is, moreover, evidence that many

more applicants could have profited from HCSP had the funds and facilities been available.

2) Health Careers Summer Program is demonstrably effective in motivating its participants to apply to medical and dental schools and enhancing their ability to gain acceptance.
3) It is clear from the responses of the students, tutors and observers that each component of the Program has had a strong positive effect in increasing the knowledge and reinforcing the career goals of its participants.
4) The evaluation has proved extremely helpful in locating those aspects of recruitment, admission, administration and instructional services and other experiences which will increase the effectiveness of HCSP. These recommendations are highlighted in the text and many have been already adopted for HCSP 1971.
5) It is possible to adapt the format used for HCSP to other settings; Section X gives detailed recommendations for implementing such programs.

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